Remedial Investigation/Feasibility Study

Remedial Action Objectives Memorandum

FMC Corporation
J. R. Simplot Company

for the
Eastern Michaud Flats Site

September 1995

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TABLES

3.0 REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are medium-specific goals for protecting human health and the environment. Developing remedial action objectives involves identifying media of concern and the characteristics of chemicals present, evaluating chemical migration and exposure pathways, and determining potential receptor points. Much of this information is contained in the Baseline Risk Assessment (BRA), which is summarized in Section 2.3.3.

Remedial Action Objectives (RAOs) for the various exposure pathways and constituents of concern associated with both current and future conditions at the EMF Site are provided in this Section. Preliminary Remediation Goals (PRGs), Maximum Contaminant Levels (MCLs), and Risk-Based Concentrations (RBCs) have been used as screening tools (see Section 2) to identify significant sources and source areas which contribute to the estimated risk as presented in the BRA. RAOs have been developed for all pathways where the BRA has identified excess cancer risk greater than 1×10^{-6}, or where a HQ greater than 1 was indicated.

Media of Interest

As described in Section 2, the media of interest for the EMF site are soils, groundwater, and air. Surface water drainage is contained within the FMC and Simplot OUs. The baseline human health risk assessment states "... There does not appear to be any potential for significant human exposure to potentially contaminated surface water or sediment near the site;...". Additionally, the ecological risk assessment states "... Potential site-related risks were not identified for the riparian, riverine, or mudflat habitats associated with the Portneuf River". Therefore, surface water was eliminated as a media of concern.

This Section summarizes the RAOs for each environmental medium of concern by OU, and discusses potential Applicable or Relevant and Appropriate Requirements (ARARs) for the site. Preliminary RAOs developed for air, soils, and groundwater for the EMF site and described in the Identification of Candidate Technologies Memorandum (Bechtel, 1993) were as follows:

RAOs for Air. Preliminary remedial action objectives for air are to:

- Prevent the potential for direct contact with surficial materials having greater than 10^{-4} to 10^{-6} excess cancer risk, or having a hazard index greater than 1.0 for noncarcinogenic risk and/or in excess of chemical-specific ARARs.
- Prevent the potential for inhalation of, ingestion of, and/or dermal contact with particulates having greater than 10^{-6} to 10^{-4} excess cancer risk, or having a hazard index greater than 1.0 for noncarcinogenic risk and/or in excess of chemical-specific ARARs.

- Prevent emissions in excess of chemical-specific ARARs.
- Prevent the potential for inhalation of gaseous and radioactive air emissions having greater than 10^{-6} to 10^{-4} excess cancer risk, or having a hazard index greater than 1.0 for noncarcinogenic risk and/or in excess of chemical-specific ARARs.

RAOs for Soils. Preliminary remedial action objectives for soils are to:

- Prevent the potential for ingestion of, and/or dermal contact with, contaminated soils/sediments having greater than 10^{-6} to 10^{-4} excess cancer risk, or having a hazard index greater than 1.0 for noncarcinogenic risk and/or in excess of chemical-specific ARARs.
- Prevent the potential for inhalation of contaminants having greater than 10^{-6} to 10^{-4} excess cancer risk, or having a hazard index greater than 1.0 for noncarcinogenic risk and/or in excess of chemical-specific ARARs.
- Prevent the potential for migration, via the air pathway, of soil/sediment contaminants in excess of chemical-specific ARARs.

RAOs for Groundwater. Preliminary RAOs for groundwater are to:

- Prevent the potential for ingestion of groundwater containing contaminants having greater than 10^{-6} to 10^{-4} excess cancer risk, or having a hazard index greater than 1.0 for noncarcinogenic risk and/or in excess of chemical-specific ARARs.
- Prevent the potential for further migration of contaminated groundwater in excess of chemical-specific ARARs.

These RAOs have been refined from the preliminary RAOs presented in the RI/FS Work Plan (Bechtel, 1992) and the Candidate Technologies Memorandum (Bechtel, 1993) based on the results of the Remedial Investigations and the Baseline Risk Assessment. The data from the site remedial investigations and the baseline risk assessment, combined with these RAOs will provide the basis for developing specific remedial alternatives for the EMF site.

In general, the RAOs are goals which should be consistent with the goals of the National Contingency Plan [40 CFR § 300.430 (e)], which specify excess cancer risk in the range of 10^{-6} to 10^{-4} and a hazard quotient for exposure to non-carcinogenic chemicals of 1 or less. In developing remedial actions, however, it should be noted that the NCP states that 10^{-6} is the "point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure". EPA guidance (OSWER Directive 9355.0-30) states:

> "EPA uses the general 10^{-4} to 10^{-6} risk range as a 'target range', within which the Agency strives to manage risks as part of a Superfund cleanup. Once a decision has been made to take an action, the Agency has expressed a preference for cleanups achieving the more protective end of the range, (i.e., 10^{-6}), although waste management strategies achieving reductions in site risks anywhere within the risk range may be deemed acceptable by the EPA risk manager. Furthermore, the upper range is not a discrete line at $1x10^{-4}$, although EPA generally uses $1x10^{-4}$ in making risk management decisions. A specific risk estimate around 10^{-4} may be considered acceptable if justified based on site-specific conditions, including any remaining uncertainties on the nature and extent of contamination and associated risks. Therefore, in certain cases EPA may consider risk estimates slightly greater than $1x10^{-4}$ to be protective. "

The guidance also states:

> "Remediation goals developed under CERCLA Section 121 are generally medium-specific chemical concentrations that will pose no unacceptable threat to human health and the environment. Preliminary remediation goals are developed early in the RI/FS process based on ARARs and other readily available information, such as concentrations associated with 10^{-6} cancer risk or a hazard quotient equal to one for non-carcinogens calculated from EPA toxicity information. These preliminary goals may be modified based on results of the baseline risk assessment, which clarifies exposure pathways and may identify situations where cumulative risk of multiple contaminants or multiple exposure pathways at the site indicate the need for more or less stringent cleanup levels than those initially developed as preliminary remediation goals. In addition to being modified based on the baseline risk assessment, preliminary remediation goals and the corresponding cleanup levels may also be modified based on the given waste management strategy selected at the time of remedy selection that is based on the balancing of the nine criteria used for remedy selection (55 Fed.Reg. at 8717 and 8718)."

Current exposure pathways are primarily associated with the presence of raw materials, products, byproducts, and wastes which are part of active plant operations within the FMC and Simplot OUs. Based on the analyses of RI data described in Section 2, and the results of the BRA, preliminary RAOs for the EMF Site have been developed for the soils/solids and air pathways for current and future workers within the FMC and Simplot OUs, and for current and future residents within the Offsite OU. RAOs have also been developed for the groundwater pathway for future workers. Some of these may be combined or eliminated later in the analysis of RAOs or in the FS. The RAOs will serve as the basis for the development and screening of alternatives in the feasibility study.

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3.1 FMC OPERABLE UNIT

The FMC Operable Unit (FMC OU) consists of the operating FMC Corporation Elemental Phosphorus Plant (FMC plant) and the adjacent FMC-owned land to the north and northeast. The aspects of the Human Health Risk Assessment which are applicable to the FMC OU are evaluations of the potential carcinogenic and noncarcinogenic health effects of the site-related constituents to the current and hypothetical future workers within the operating facility and northern properties areas. There are currently no residences located within the FMC OU, and deed restrictions placed on all the FMC properties will limit the future use of the properties to industrial/commercial use. Current and future land use assumptions considered in estimating RME risks and exposures may be relevant to the consideration of RAOs.

The results of the remedial investigation and the baseline risk assessment are provided in Section 2. The nature and extent of contamination for the FMC OU are described in Section 2.1.1, and contaminant fate and transport for the FMC OU are described in Section 2.1.2. The baseline risk assessment for the FMC OU is summarized in Section 2.1.3.

3.1.1 Exposure Pathways of Concern

The exposure pathways listed below warrant evaluation of preliminary RAOs for the constituents and media of potential concern, based on the RI and the BRA. Some of these may be combined or eliminated later in the analysis of RAOs or in the FS. Current exposure pathways are primarily associated with the presence of raw materials, products, byproducts, and wastes which are part of active plant operations. It should be noted that in accordance with EPA guidance, the BRA did not consider institutional controls that would account for risk reduction.

3.1.1.1 Soils and Solids

As summarized in Section 2.1.3.1, for soils and solids, two exposure pathways of potential concern were identified for current workers: incidental ingestion of soils and external gamma radiation. For future workers, similar potential exposure pathways would exist, with the additional potential for inhalation of radon gas if new subsurface structures were constructed in or near contaminated soils.

Ingestion of soils or solids was identified as exceeding the 1.0E-06 Incremental Cancer Risk (ICR) for four worker groups; slag pile workers, pond workers, maintenance workers, and contract workers. Due primarily to potential exposure to radiological carcinogens lead-210 and radium-226, an ICR of 1.79E-05 was estimated for slag pile workers, 9.70E-06 was estimated for pond workers, 8.72E-06 was estimated for maintenance workers, and an ICR of 2.91E-06 was estimated for contract workers. Due

primarily to potential exposure to chemical carcinogens arsenic and beryllium, an ICR of 8.32E-06 was estimated for slag pile workers, 5.99E-06 was estimated for pond workers, 5.38E-06 was estimated for maintenance workers, and an ICR of 1.79E-06 was estimated for contract workers.

Exposure to gamma radiation was estimated based on a 1986 aerial survey of the area (EPA 1987). ICRs were estimated to be 8.09E-04 for slag pile workers, 6.05E-04 for pond workers, 2.72E-04 for maintenance workers, and 9.06E-05 for contract workers. External radiation exposure from radioactive substances in the soil, slag, and other surficial materials on site accounts for approximately 95% of the radiological cancer risks for current facility workers in the baseline risk assessment.

Occupational radiation exposures at the FMC OU are below the maximum levels established by OSHA and by EPA Radiation Protection Guidance to Federal Agencies for Occupational Exposure to Radiation. OSHA has established a Maximum Permissible Dose (MPD) for worker radiation exposure (whole body) of 5,000 mrem per year. Based on the 1986 survey, whole body radiation doses to workers were estimated to be from 18 to 200 mrem per year, well below the OSHA established MPD. Of this total, 10.8 mrem per year is attributable to cosmic ray contributions. A gamma radiation exposure study was performed at the FMC facilities in August 1994 by IT Corporation. The results of this study were transmitted to the EPA in June 1995. Table 2 of the IT study provides that the measured exposure levels for site workers at various locations throughout the site, including ore handling, calciners, cooling towers, the furnace building, slag pit and slag pile areas. Measured exposure rates, which included background, ranged from 10 (inside the control room) to 52 (slag pile, not shielded) µrem per hour (20 to 104 mrem per year), significantly below the OSHA established MPD. These data indicate that the risk due to gamma radiation exposure estimated in the BRA may be overstated.

For future workers, the estimated major risk driver related to soils and solids was inhalation of radon in a hypothetical new building constructed near contaminated soil with the site redeveloped for some alternative industrial or commercial use. An ICR of 4.55E-03 for radon inhalation accounts for 82% of the estimated total risk to future workers from the soil pathway. Other soils pathways of risk were external gamma radiation exposure (ICR of 9.53E-04, accounting for all but 1% of the remaining estimated cancer risk) and incidental ingestion of soil or solids (ICRs of 1.45E-05 for radiological carcinogens lead-210 and radium-226, and 8.97E-06 for chemical carcinogens arsenic and beryllium.

As stated above, the potential risk associated with gamma radiation appears to be overstated in the BRA. Additionally, the BRA does not appear to adequately consider the fact that the radon emanation rate from glassy phosphorus slag has been found to be small, or the effects of shielding with respect to radon seepage into future structures that may be constructed for some alternative commercial or industrial use.

The potential exposure pathways of external gamma radiation and incidental soil ingestion will be considered for both current and future workers in the development of RAOs. For future workers, the potential for inhalation of radon gas will be also considered.

3.1.1.2 Groundwater

Groundwater within the FMC OU is used for both the facility drinking water supply and industrial use. Water for facility use is currently produced from two wells screened in the deeper aquifer (FMC 1 and FMC 3 on Figure 2.1-2). Drinking water supplied from these wells meets or exceeds the requirements for all Maximum Contaminant Levels (MCLs) of the Safe Drinking Water Act. The Lindley well, located north of U.S. 30 is also owned by FMC, and has been used as a water supply for the adjacent house, which has been used as supplemental offices. Currently, bottled water is used at this facility. No other groundwater withdrawals occur within the FMC OU. Groundwater beneath the FMC OU is not a source of drinking water for residential or municipal use, and the Human Health Risk Assessment did not identify any risk to current workers for this exposure pathway. Therefore, this current exposure pathway is eliminated from further consideration in the feasibility study for the FMC OU.

Potential ICRs to future workers due to ingestion of groundwater from the shallow aquifer were estimated at 6.01E-04 for arsenic and 1.56E-05 for lead-210 and radium-226. The risk assessment assumes that shallow groundwater would be pumped directly from a well installed within the FMC OU without treatment. As shown on Table 2.1-15, constituent concentrations exceed primary MCLs in certain areas of the FMC OU for antimony, arsenic, nitrate, thallium, gross alpha and gross beta. The risk assessment calculated lead-210 and radium-226 activities from the measured gross alpha data. Speciation data for radionuclides in groundwater were generated during the RI, but were not used in the risk assessment. These data show that lead-210 and radium 226 data were overestimated in the risk assessment, and associated risk may also be overstated as a result.

As indicated above, a number of modifications have been made at the FMC facility which will reduce the potential for migration of site-related constituents of concern into the groundwater beneath the FMC OU. There currently are no significant active with applied hydraulic head sources of constituents of potential concern to groundwater within the FMC OU.

The potential exposure to site-related constituents of concern from groundwater intake will be considered for future workers in the development of RAOs.

3.1.1.3 Surface Water and Sediments

As discussed in Section 2.1.2.3, surface water and sediments are not pathways of concern for the EMF site. Therefore, these pathways will not be considered in the development of RAOs.

3.1.1.4 Air

The Human Health Risk Assessment identified a potential risk due to inhalation of EMF-related constituents for current and future site workers. For slag pile workers, an ICR of 5.98E-06 was estimated primarily for inhalation of chemical carcinogens cadmium, hexavalent chromium, and arsenic and 2.04E-05 primarily for inhalation of the radiological carcinogen polonium-210. For pond workers, an ICR of 3.69E-06 was estimated for inhalation of cadmium, hexavalent chromium, and arsenic and 1.26E-05 for inhalation of polonium-210. For maintenance workers, an ICR of 1.79E-06 was estimated for inhalation of cadmium, hexavalent chromium, and arsenic and 6.11E-06 for inhalation of polonium-210.

It should be noted that both slag pile and pond worker locations are in cross-gradient or upgradient locations with respect to EMF facility emissions, and therefore the use Site 2 monitoring data is very conservative and overstates the risks associated with FMC OU related constituents.

For hypothetical future site workers, an ICR of 5.98E-06 was estimated primarily for inhalation of chemical carcinogens cadmium, hexavalent chromium, and arsenic and 2.04E-05 for inhalation of the radiological carcinogen polonium-210. For hypothetical future residents, ICRs due to inhalation were estimated at 1.54E-05 for cadmium, hexavalent chromium, and arsenic and 6.03E-05 for polonium-210. The combination of continued operations and deed restrictions will assure that the properties within the FMC OU will be used for commercial/industrial purposes. Therefore, the potential exposure pathway of inhalation of cadmium, hexavalent chromium, arsenic and polonium-210 for current and future workers will be considered in the development of RAOs.

3.1.2 Additional Site-Specific Factors Considered in Establishing RAOs

Exposure pathways carried forward are evaluated further to determine whether preliminary RAOs are necessary for each pathway. For those pathways retained, all constituents, media and exposure pathways posing potential incremental carcinogenic risks greater than $1x10^{-6}$ were identified and evaluated for RAOs. Site-specific exposure, technical, and uncertainty factors relevant to the establishment of RAOs were also identified, and each pathway that met the action criteria was then evaluated for RAOs. Site-specific factors were used to establish RAOs where appropriate. Applicable

or Relevant and Appropriate Requirements (ARARs) are discussed in Section 3.1.3. Section 3.1.4 documents the preliminary RAOs that will be used to guide the FS.

Land Use

Current and future land use assumptions considered in estimating RME risks and exposures may be relevant to the consideration of RAOs. Current and future exposures within the FMC OU were evaluated using industrial/commercial exposure assumptions, while exposures to soils outside the FMC OU were evaluated using residential exposure assumptions. Continued operation of the FMC facilities and deed restrictions on the FMC properties control the land use, and make these appropriate evaluations for both current and future use of the FMC OU.

Cumulative Risk and Multiple Pathways

Workers at the FMC OU are potentially exposed to naturally occurring radionuclides from multiple sources and pathways in addition to site-related constituents, including: natural background in local soils, cosmic radiation, and anthropogenic sources. While some of these sources have different exposure pathways and effects, there are multiple pathways for some, notably external gamma exposure. The presence of the other sources needs to be considered and evaluated.

Institutional Controls

there were site specific adjustment factors.

The cumulative site baseline risk assessment included all media that are appropriate and, per EPA guidance, did not consider institutional controls (ICs) that would account for risk reduction. Actual current industrial exposures at the EMF facilities are lower since ICs such as fencing and worker health and safety programs are in place that reduce exposure and risk. FMC believes the operating facilities are currently in compliance with all applicable OSHA and environmental requirements.

Occupational radiation exposures within the FMC OU are significantly below the maximum levels established by OSHA. Institutional controls which affect occupational exposures need to be considered in the preparation of RAOs for the FMC OU.

Technical Factors - Background

In addition to RME estimates, the BRA evaluated risks associated with site-related COCs in background soils and compared the background and site-related risks to determine the excess risk over background. Estimates of the risk attributable to naturally-occurring background levels in local soils of site-related constituents of interest range from 1.84E-6

for the chemical constituents related to the site to 4.60E-4 for external gamma radiation. Other site-related COCs in soils are also present in background.

In most scenarios the risks associated with background were of similar magnitude to the risks associated with site-related constituents. The most significant excess risks over background were associated either with potential future exposure to soils in the event residential exposures near the facility increased, or potential future exposure to workers within the facility if future conditions changed and no further action was taken .

Given the high background levels and the small increments over background for some constituents/pathways, the FS will have to address whether it will be technically practicable to measure and/or clean up levels which are smaller than, or indistinguishable from background.

Uncertainty Factors - Soil Estimates

Cancer risks to current site workers are primarily associated with exposure to external gamma radiation in the soils, almost entirely due to radium-226. Radium-226 was not measured directly in soils, and there are significant uncertainties with respect to its activity within the FMC OU. Data used to estimate exposure was based on an aerial survey conducted in 1986. Another significant source of potential risk to future site workers indicated in the BRA is from inhalation of radon in buildings that might be constructed within the FMC OU. Two major sources of uncertainty in the risk estimates for potential future indoor radon inhalation are the estimation of soil radium levels from measured gross alpha activity and modeling of radon infiltration into the hypothetical future site building.

3.1.3 Applicable or Relevant and Appropriate Requirements

This section presents a summary of constituent-specific ARARs used in the development of RAOs. Additional ARARs and TBCs are provided in Table 3.1-1. Potential constituent-specific ARARs have been evaluated for all constituents of potential interest at several points in the RI/FS process (RI/FS Work Plan, 1992, Identification of Candidate Technologies Memorandum, 1993, prepared by Bechtel Environmental, Inc.). In keeping with the requirements of CERCLA, the NCP, and EPA policies, RAO development must consider compliance with federal and state environmental laws and standards, requirements, criteria, or limitations promulgated under such laws that are applicable or relevant and appropriate under site conditions.

Some waste streams and byproducts at the FMC OU are subject to RCRA, while others are Bevill exempt. The facility is active, and therefore most ARARs and TBCs would relate to active operations and worker exposure, such as RCRA (an ARAR) and OSHA (a TBC).

Potential ARARs were identified from reviews of pertinent environmental and health statutes, including requirements promulgated under:

The Clean Air Act (42USC§7401 *et seq.*);

The Clean Water Act (33USC§1251 *et seq.*);

The Occupational Safety and Health Act (29USC§651 *et seq.*);

The Safe Drinking Water Act (42USC§300f *et seq.*); and

The Resource Conservation and Recovery Act (42USC§6901 *et seq.*).

In addition, EPA Region 10 has specifically requested further evaluation of the potential ARAR status of the Uranium Mill Tailings Radiation Control Act (42USC§7901 *et seq.*) for the EMF site. FMC believes its elemental phosphorus plant is currently in compliance with all applicable requirements of the statutes listed above. However, certain of the implementing regulations for these statutes may be relevant and appropriate for consideration in the FS. In particular, regulations promulgated under the Safe Drinking Water Act (SDWA) and the Uranium Mill Tailings Radiation Control Act (UMTRCA) may fall into this category and are discussed below.

Clean Air Act

The Clean Air Act (CAA), 42 U.S.C. 7401 et seq., is the primary federal legislation for protecting air quality. Pursuant to the CAA, EPA has promulgated National Ambient Air Quality Standards (NAAQS), for specified constituents and particulate matter, National Emission Standards for Hazardous Air Pollutants (NESHAPs), and New Source Performance Standards (NSPS). As recognized in EPA guidance, CERLA sites are potential sources of air pollutant emissions, both before and during the response action. Typical sources of such emissions include landfills, lagoons, contaminated soil and equipment used during the cleanup process. Thus, air-related ARARs clearly may address releases at the Pocatello site and associated cleanup activities. However, it is not clear how air ARARs and remediation goals for the response action can affect permitted or other authorized releases from the ongoing operations of the FMC facility.

In accordance with CAA § 109, EPA has promulgated NAAQS for six pollutants. These NAAQS specify the maximum concentration of the pollutant which is to be permitted in the ambient air, as averaged over a specified time period, and form the basis for other federal and state regulations.

The CAA delegates primary responsibility for assuring that NAAQS are attained and maintained to the states, requiring each state to adopt and submit to EPA for approval a plan for the implementation, maintenance, and enforcement of the NAAQS (State Implementation Plan, or SIP). SIPs include emissions standards, monitoring

recordkeeping, enforcement, and other measures. The emissions standards and monitoring requirements are substantive requirements and are potential ARARs. Idaho's SIP is set forth in Rules and Regulations for the Control of Air Pollution in Idaho (IDAPA 16.01.01000 et seq.).

The 1990 amendments to the CAA identify a list of 189 "hazardous air pollutants" (HAPs), including the following constituents of concern: phosphorus and compounds of arsenic, cadmium, chromium and radionuclides. In order to control emissions of HAPs, EPA is in the process of developing Maximum Achievable Control Technology (MACT) standards for all "major" and "area" sources. Source categories identified by EPA include solid waste treatment, storage and disposal facilities, site remediation and phosphate fertilizers production. 57 FR 31590-91, July 1992. If the FMC facility constitutes a major regulated source of HAPs, MACT standards will be "applicable." Further, even if the MACT standards are not directly applicable, they may still be relevant and appropriate.

In addition, NESHAPs promulgated by EPA prior to the 1990 amendments, such as the polonium^{210} NESHAP for emissions from elemental phosphorus plants remain in effect unless and until superseded by new regulations.

National Primary Drinking Water Standards (40 CFR Section 141)

Drinking water standards promulgated under the SWDA establish maximum contaminant levels (MCLs) for community drinking water systems. Such standards exist for a variety of chemical and radiological substances, and they legally apply at the taps of systems supplying 25 or more users.

Primary MCLs fall into the category of potentially being relevant and appropriate ARARs. Eight constituents meet or exceed their respective primary MCLs beneath the FMC OU, but none exceed MCLs at the Offsite OU boundary. Concentrations for these constituents within groundwater directly beneath some portions of the FMC OU are higher than they are at the northern property boundary.

Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, 40 CFR Section 192

EPA has cited the Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, 40 CFR Part 192, promulgated under the Uranium and Thorium Mill Tailings Radiation Control Act of 1978 (UMTRCA), as the principal radiation-specific federal requirement at various other NPL sites around the country. The UMTRCA soil standard says that an average concentration of Ra-226 in an area of soil containing tailings shall not exceed 5 pCi/g in excess of background within the upper 15 cm (6 in.) of the soil column. Although the standards were originally intended for the

cleanup of uranium and thorium mill tailings, they have been applied to lands with naturally occurring radioactive material wastes due to the similarity of conditions.

Given the fact the these standards apply to cleanup of closed facilities, they are not relevant or appropriate for active industrial operations within the FMC OU. However, these standards should be considered relative to the Offsite OU. These standards would also be relevant and appropriate for consideration at the time of the closure of the FMC plant.

Worker Protection Standards Under OSHA

According to the NCP (at 40 CFR Part 300.150, and more fully explained in EPA response to comments, at 55 Fed Reg 8679-80, March 8, 1990), OSHA standards for protection of response-action workers are directly applicable as worker-protection laws, but "general OSHA standards ... do not come within the scope of ARARs under CERCLA section 121(d) (2) ... "Thus, OSHA standards are no longer included on the list of potential ARARs. EPA notes that there are some standards in OSHA that set contaminant levels in the workplace that may also be relevant - though not applicable - to the determination of a cleanup level at a CERCLA site (due to the absence of other standards). In such a case, those standards may be included among the requirements 'To Be Considered'."

OSHA standards for protection of workers from radioactivity are factors "To Be Considered" in the evaluation of and establishment of RAOs, PRGs, and if necessary potential remedial action alternatives.

3.1.4 Remedial Action Objectives

Remedial Action Objectives (RAOs) for the various exposure pathways and constituents of concern associated with both current and future commercial/industrial conditions at the FMC OU are provided below. Many of the estimated risks for the exposure pathways identified above are estimated to be within the acceptable range of 10^{-6} to 10^{-4}. PRGs, MCLS, and RBCs have been used as screening tools (see Section 2.1) to identify significant sources and source areas which contribute to the estimated risk as presented in the BRA.

Based on the analyses of RI data described in Section 2, and the results of the BRA, preliminary RAOs for the FMC OU have been developed for the soils and solids and air pathways for both current and future workers, and for the groundwater pathway for future workers. Although the BRA has estimated risks for future residential scenarios within the FMC OU, continued operations and deed restrictions make these scenarios highly unlikely. Therefore, RAOs are based only on industrial/commercial scenarios. These RAOs will serve as the basis for the feasibility study.

3.1.4.1 Soils and Solids within the FMC OU

Within the FMC OU the current potential pathways of concern with respect to soils and solids are worker ingestion of byproducts or wastes, or soils mixed with byproducts or wastes, and external exposure to gamma radiation from byproducts and wastes. However, within the FMC OU, soils and solid materials were not found to significantly contribute constituents to the surface water or groundwater pathways. Constituents in soils identified as exceeding RBCs for industrial conditions were arsenic, beryllium, cadmium, fluoride, and zinc. Radionuclides identified as exceeding RBCs were lead-210, polonium-210, potassium-40, and uranium-238. It was also estimated that radium-226 was above RBCs, but no direct analyses were made. In most instances, as would be expected, these exceedances were restricted and associated with specific sources related to plant operations, primarily byproduct and waste storage. The RAOs for soils and soilds for current industrial exposure for the FMC OU are as follows:

- Prevent external exposure to radionuclides in soils at levels that pose estimated excess risk above the range of 10^{-6} to 10^{-4}, or site-specific background levels where that is not practicable. Uncertainties associated with exposure to gamma radiation must be fully evaluated prior to establishing PRGs for the soils/solids exposure pathway.

- Prevent ingestion of soils containing radionuclides, arsenic, beryllium, cadmium, fluoride, or zinc at levels that pose an excess cancer risk above 10^{-6} to 10^{-4} or site-specific background levels where that is not practicable.

- Prevent release and migration of radionuclides or chemicals that, under current conditions, may pose unacceptable risk to humans. The remediation goals to be used in the FS will begin by looking at the feasibility of achieving the protective end of the risk range (10^{-6} excess cancer risk) or site-specific background levels where that is not practicable.

RAOs for future worker exposure to soils/solids would be similar to those for current workers. The RAOs for current workers would be modified as follows:

- Prevent ingestion, direct contact, release or migration of radionuclides or chemicals in source materials that, in the event of closure of the FMC facilities or changed future operating conditions would pose an unacceptable risk to human health or have adverse effect on the environment.

3.1.4.2 Groundwater within the FMC OU

As discussed in Section 3.1.1, groundwater within the FMC OU is used for both the facility drinking water supply and industrial use. Water for facility use is currently produced from two wells screened in the deeper aquifer (FMC 1 and FMC 3 on Figure 2.1-2). The Lindley well, located north of U.S. 30 is also owned by FMC, and has

been used as a water supply for the adjacent house, which has been used as supplemental offices. Currently, bottled water is used at this facility. No other groundwater withdrawals occur within the FMC OU.

Future groundwater use within the FMC OU represents a potential exposure pathway if groundwater is pumped from some areas of the shallow aquifer beneath the FMC OU where MCLs for antimony, arsenic, nitrate, thallium, gross alpha and gross beta are exceeded. The BRA indicated that risks could be associated with arsenic and lead-210 if new shallow wells were constructed and used untreated as a drinking water supply. The following RAO would apply to potential future industrial scenarios at the FMC OU:

- Prevent potential ingestion of groundwater with levels of chemicals or radionuclides exceeding primary MCLs.

It should be noted that attenuation and advective mixing result in concentrations below MCLs at the FMC and Simplot OU boundaries within the Offsite OU. Site groundwater ultimately discharges to the Portneuf River, within the FMC OU boundary, and represent a small percentage of the total flow of the river in comparison to other sources.

3.1.4.3 Air within the FMC OU

Risks were estimated in excess of 1.0E-6 for inhalation of cadmium, hexavalent chromium, arsenic and polonium 210 for both current and future workers. For slag pile workers, an ICR of 5.98E-06 was estimated for inhalation of chemical carcinogens cadmium, hexavalent chromium, and arsenic and 2.04E-05 for inhalation of the radiological carcinogen polonium-210. For pond workers, an ICR of 3.69E-06 was estimated for inhalation of cadmium, hexavalent chromium, and arsenic and 1.26E-05 for inhalation of polonium-210. For maintenance workers, an ICR of 1.79E-06 was estimated for inhalation of cadmium, hexavalent chromium, and arsenic and 6.11E-06 for inhalation of polonium-210.

As discussed in Section 2.1, air emissions from the active FMC plant are regulated by the state of Idaho in Air Permit 13-1260-0005. The plant permit includes emissions from ore handling/crushing operations, claciners, various material handling systems, four electric arc furnaces, electrostatic precipitators, a carbon monoxide flaring system, and the phos dock. There are no significant criteria pollutant emissions from non-permitted sources. Air emissions from active operations are ultimately controlled by the Clean Air Act and specific State requirements.

Based on the RI and BRA findings, the following RAO would apply for current workers for the air pathway within the FMC OU:

- Prevent the inhalation of cadmium, hexavalent chromium, arsenic, and polonium-210 at levels which would result in an ICR in excess of the 1.0E-6 to 1.0E-4 range.

For future workers, the BRA appears to overstate the risk, since it was assumed that future emissions would be equivalent to current emissions even though FMC plant operations would cease. For hypothetical future site workers, an ICR of 5.98E-06 was estimated for inhalation of chemical carcinogens cadmium, hexavalent chromium, and arsenic. For inhalation of the radiological carcinogen polonium-210 and ICR of 2.04E-05 was estimated.

The BRA also estimated the potential risks to future residents within the FMC OU northern properties. Because deed restrictions placed on all the FMC properties will limit the future use of the properties to industrial/commercial use, the air pathways for hypothetical future residents within the FMC OU are not retained for further evaluation in the feasibility study.

should be retained.

Based on the RI and BRA findings, the following RAO would apply for the air pathway for future workers within the FMC OU:

- Prevent the inhalation of cadmium, hexavalent chromium, arsenic, and polonium-210 at levels which would result in an ICR in excess of the 1.0E-6 to 1.0E-4 range.

TABLE 3.1-1
FMC OU - SUMMARY OF POTENTIAL LOCATION-SPECIFIC ARARS
(Combined State and Federal)

LOCATION	STATUTE OR REGULATION	DESCRIPTION	COMMENTS
Floodplain	Executive Order 11988 40 CFR Part 6, Appendix A	Any action taken in a 500-year floodplain must consider flood hazards and floodplain management.	Portions of the FMC OU are located within a 500-year or 100-year floodplain. These requirements are applicable to potential actions in floodplain areas.
	RCRA Location Standards 40 CFR §264.18	Hazardous waste units located in a 100-year floodplain must be designed, operated and maintained to prevent washout of hazardous wastes.	There are no hazardous waste management units within the 100-year floodplain at the FMC OU.
Rivers/Streams	Rivers and Harbors Act	Diversion, channeling or other activities affecting regulated bodies of water may require consultation with the Corps of Engineers	
	Fish and Wildlife Coordination Act 16 U.S.C. § 661 et seq.	Remedial actions taken in areas that may affect streams and rivers must be undertaken in a manner that protects fish and wildlife	
	Fish and Wildlife Conservation Act 40 CFR §83	Remedial actions in areas containing fish and wildlife must promote conservation of fish and wildlife.	
Critical Habitat	Endangered Species Act 16 U.S.C. § 1531	Remedial actions in critical habitats must conserve endangered or threatened species and their habitat.	No critical habitats have been identified within the FMC OU.
	Migratory Bird Treaty Act 16 U.S.C. § 703-711	Remedial actions must consider protection of migratory birds, bald or golden eagles.	

TABLE 3.1-1
FMC OU - SUMMARY OF POTENTIAL LOCATION-SPECIFIC ARARS
(Combined State and Federal)

LOCATION	STATUTE OR REGULATION	DESCRIPTION	COMMENTS
Historic Property	National Historic Preservation Act 16 U.S.C. § 470 et seq. 36 CFR Part 800 Archeological and Historic Preservation Act 16 U.S.C. § 1531	Remedial activities must take into consideration their effect on properties included or eligible for inclusion on the National Register of Historic Places. Remedial actions at sites with historical or archaeological data must minimize adverse effects	No historic or archaeologically significant areas have been identified within the FMC OU.
Waste Disposal Facility/Hazardous Waste Storage	Resource Conservation and Recovery Act 42 U.S.C. § 6901-6987 40 CFR Part 268	Restricts land disposal of hazardous wast and specifies treatment standards that must be met before these wastes can be land disposed.	Applicable if the selected remedial alternative involves placement of waste from outside the area of contamination; if waste is removed, treated, and redeposited into the same or another unit. A treatability variance may also be applicable.

TABLE 3.1-1
FMC OU - SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARS
(Combined State and Federal)

MEDIA	STATUTE OR REGULATION	DESCRIPTION	COMMENTS
Groundwater	Safe Drinking Water Act 42 U. S. C §300f et seq.	Goal of the act is to protect human heath by protecting the quality of drinking water. The Act authorizes the establishment of drinking water standards	Applies to CERCLA site discharges to public drinking water sources, including groundwater sources.
	40 CFR Part 141	Establishes primary maximum contaminant levels (MCLs) and maximum contaminant goals (MCLGs) that are health-based standards for public water systems.	
	40 CFR Part 143	Establishes secondary MCLs that are welfare-based standards for public water systems.	Secondary MCLs are not federally enforceable standards but intended as guidelines for the States. Secondary MCLs are not ARARs unless promulgated by States.
	40 CFR Parts 144-147	Provides protection of underground sources of drinking water.	Substantive requirements may apply if groundwater were to be treated and reinjected.
Surface Water	Clean Water Act 33 U.S.C. § 1251 - 1376	Provides for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.	
	40 CFR Part 131 Quality Criteria for Water	Federal water quality criteria are guidelines from which States determine their water quality standards.	Applicable to direct discharges to surface waters.

TABLE 3.1-1
FMC OU - SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARS
(Combined State and Federal)

MEDIA	STATUTE OR REGULATION	DESCRIPTION	COMMENTS
Surface Water (Continued)	40 CFR Part 122, 125	Requires permits for the discharge of pollutants from any point source into waters of the United States.	NPDES is not an ARAR for discharge to a POTW or reinjection. It would be applicable for direct discharge to the Portneuf River.
	40 CFR Part 403	Sets standards to control pollutants which p[ass through or interfere with treatment processes in publicly owned treatment works (POTW) or which may contaminate sewage sludge. Standards are set by the POTW.	
Air	Clean Air Act 42 U.S.C. § 7401 et seq.	Regulates emissions to protect human health and the environment. Enabling statute for major provisions such as NAAQS, NESHAPS and NSPS.	
	40 CFR Part 50 National Primary and Secondary Ambient Air Quality Standards	NAAQS for the protection of public health and welfare	Primary standards applicable for any remedial alternative emitting regulated pollutants.
	40 CFR Part 60 New Source Performance Standards (NSPS)	Sets emission standards for new and modified sources.	

TABLE 3.1-1
FMC OU - SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARS
(Combined State and Federal)

MEDIA	STATUTE OR REGULATION	DESCRIPTION	COMMENTS
Soils and Solids	Resource Conservation and Recovery Act 42 U.S.C. § 6901-6987		
	40 CFR Part 257	Establishes criteria for use in determining which solid waste disposal facilities and practices pose a reasonable probability of adverse effects on health or the environment and thereby constitute prohibited open dumps.	Current focus of RCRA Subtitle D is primarily on municipal landfills.
	40 CFR Part 260	Provides definitions of hazardous waste terms, procedures for rule-making petitions, and procedures for delisting a waste.	Definitions may be relevant.
	40 CFR Part 261	Defines those solid wastes which are subject to regulation as hazardous wastes under 40 CFR Parts 261-265 and Parts 124, 270, and 271.	
	40 CFR Part 262	Establishes Standards for generators of hazardous waste.	Applicable if the selected remedial alternative involves generation and off-site transport of hazardous wastes.
	40 CFR Part 264	Establishes minimum national standards which define the acceptable management of hazardous waste for owners and operators of facilities which treat, store and dispose of hazardous waste.	Generally applicable for any remedy that involves current treatment, storage, or disposal. If the action does not involve current treatment, storage or disposal of hazardous waste, it may still be relevant and appropriate.

TABLE 3.1-1
FMC OU - SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARS
(Combined State and Federal)

MEDIA	STATUTE OR REGULATION	DESCRIPTION	COMMENTS
Soils and Solids	40 CFR Part 268	Restricts land disposal of hazardous wast and specifies treatment standards that must be met before these wastes can be land disposed.	Applicable if the selected remedial alternative involves placement of waste from outside the area of contamination; if waste is removed, treated, and redeposited into the same or another unit. A treatability variance may also be applicable.
	40 CFR Part 280	Establishes regulations related to underground storage tanks.	Applicable if there are existing USTs.
	Uranium Mill Tailings Radiation Control Act 42 U.S.C. § 7901 et seq.	Sets standards for the control of residual radioactive materials from inactive uranium processing sites.	Applies to cleanup of closed facilities; not relevant or appropriate for the active industrial operations at the FMC OU.
	40 CFR Part 192	Sets standards for soils containing mill tailings	
	Occupational Safety and Health Act 29 U.S.C § 651-678	Regulates worker health and safety. Sets general industry standards for exposure to chemicals and health and safety training requirements for workers at hazardous waste sites.	EPA notes that there are some standards in OSHA that set contaminant levels for the workplace (29 CFR Part 1910, Subpart Z) that may be relevant to the determination of cleanup level (in the absence of other standards). In this case, OSHA stasndards can be classified as "To Be Considered" (TBC).

TABLE 3.1-1
FMC OU - SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARS
(Combined State and Federal)

MEDIA	STATUTE OR REGULATION	DESCRIPTION	COMMENTS
Groundwater/Surface Water	State Regulations IDAPA 16.01.02161 and 16.01.02200	General surface water quality criteria.	
	IDAPA 16.01.02299	General groundwater criteria. Sets Maximum Allowable Concentrations (MACs).	
	IDAPA 16.01.2250	Establishes specific water quality standards that are based on the use and designations assigned to a particular body of water.	
	IDAPA 16.01.2300	Establishes water quality criteria and restrictions on discharges for point source discharges to special resource waters and tributaries	
	IDAPA 16.01.2301	Allows exemptions for certain activities that result in a water quality violation.	
	IDAPA 16.01.2440	Regulates discharge of nonsewage wastewater from treatment facilities.	

TABLE 3.1-1
FMC OU - SUMMARY OF POTENTIAL ACTION-SPECIFIC ARARS
(Combined State and Federal)

ACTION	STATUTE OR REGULATION	DESCRIPTION	COMMENTS
	Occupational Safety and Health Act 29 U.S.C § 651-678	Regulates worker health and safety. Sets general industry standards for exposure to chemicals and health and safety training requirements for workers at hazardous waste sites. Contains radiation exposure limits and measurements for occupational safety, specifically Maximum Permissible Dose (MPD). The MPD equivalent for whole body exposure is 5,000 mrem/year.	EPA notes that there are some standards in OSHA that set contaminant levels for the workplace (29 CFR Part 1910, Subpart Z) that may be relevant to the determination of cleanup level (in the absence of other standards). In this case, OSHA stasndards can be classified as "To Be Considered" (TBC).
	Resource Conservation and Recovery Act 42 U.S.C. § 6901-6987	Identifies those solid wastes which are subject to regulation as hazardous wastes under 40 CFR Parts 262-265, 268 and Parts 124, 270, and 271.	May be applicable, appropriate or relevant, depending on the remedial alternative being considered.
	IDHW Title I, Chapter 6 01.600001 et seq.	Contains regulations on the handling and disposal of solid waste.	These regulations may be applicable for the treatment and disposal of Bevill exempt wastes.

TABLE 3.1-1
FMC OU - SUMMARY OF TO BE CONSIDERED MATERIALS
(Combined State and Federal)

ISSUE/AREA	TITLE	DESCRIPTION	COMMENTS
Soils	Draft Soil Screening Guidance	Provides methods for establishing screening levels that incorporate site-specific data and assumptions for certain pathways	To Be Considered in evaluating appropraiate levels for soil remediation alternatives.

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3.2 SIMPLOT OPERABLE UNIT

As noted previously, potential risks associated with the Site, including the Simplot OU, exceed the upper bound of the 10^{-6} to 10^{-4} excess cancer risk range. In addition, hazard quotients greater than one were estimated. Therefore, the general site-wide RAOs presented above have been evaluated relative to the Simplot OU. The evaluation was based on the new information available from the RI and the BRA. This information was used to consider the appropriateness of the site-wide RAOs to the Simplot OU. In addition, the preliminary listing of ARARs provided in the Candidate Technology Memorandum (Bechtel, 1993) was updated and considered in conjunction with the evaluation of the site-wide RAOs. An explanation of the above considerations and any revisions or modifications to the site-wide RAOs are provided below for each environmental medium along with a discussion of the specific exposure pathways, contaminants and sources which have been considered.

3.2.1 Exposure Pathways of Concern

The Simplot OU is primarily comprised of the area of Don Plant operations. The anticipated operational life of the facility is several decades. Given this knowledge/certainty of future land use and the RI and BRA findings that the current exposure pathways are primarily associated with the presence of raw materials, products, byproducts and wastes which are part of active operations; consideration of most exposure pathways for different future land uses is not necessary. This position is consistent with the NCP and the interpretation provided in the May 25, 1995 OSWER Directive No. 9355.7-04 "Land Use in the CERCLA Remedy Selection Process".

There is certainty with regard to future land use because there are no zoning, county land use plans, or other future land use considerations which are contrary to the continued use of the land associated with the Simplot OU in conjunction with Don Plant operations. Hypothetical exposure pathways used to evaluate future residential risks for the Simplot OU will only be considered qualitatively in the FS process. The following discussion of exposure pathways is organized by environmental medium and discusses potential exposure pathways for the current and possible future industrial settings.

3.2.1.1 Soils and Solids

As summarized in Section 2.2.3.1, two soil exposure pathways of potential concern were identified for current workers: incidental ingestion of soils and external gamma radiation. Similar potential concerns would exist for future workers, with the additional potential for inhalation of radon gas if new subsurface structures were constructed in or near contaminated soils.

The estimated ICRs due to incidental ingestion of soils were in excess of 1.0E-6. For gypstack workers an ICR of 7.3E-6 was estimated due to ingestion of lead-210 and radium-226. For maintenance workers an ICR of 2.0E-6 was estimated due to arsenic and beryllium ingestion and an ICR of 7.6E-6 for lead-210 and radium-226 ingestion was also estimated. Comparison of the Simplot OU soil concentrations for beryllium and arsenic with EPA Region IX PRGs (Section 2.2.1.1) indicates that there are a few small areas of surficial contamination scattered throughout the areas relating to Don Plant operations which account for risks associated with incidental ingestion. Areas of lead-210 and radium-226 surficial contamination appear to be more widespread. However, the majority of locations where the highest activities were measured are related to former areas where water was managed. The areas with the highest measured radionuclide activities are the unlined ditch, which formerly conveyed water to the treatment ponds and has subsequently been partially filled, and also the dewatering pit, both of which are to the north and outside the main Don Plant area. Workers are not routinely exposed to these soils during normal activities. Former ore handling operations and gypsum were also identified as sources of elevated radionuclide activity.

The ICRs for external gamma radiation were estimated at 5.0E-4 for gypstack workers and 1.35E-4 for maintenance workers. Work on or around areas of gypsum accumulation accounts for the majority of the external radiation exposure. The estimated external radiation exposure for the BRA was based upon a 1986 aerial gamma survey. Subsequent to that survey the Don Plant has conducted a ground survey of gamma exposure. Results of the ground survey, assuming no shielding, were 18.5 μR/hr (average exposure) for a gypstack worker and 12.3 μR/hr (average exposure) for a maintenance worker. These values are approximately 50% of the 38.7 μR/hr and 25.7 μR/hr estimated for the same worker categories in the BRA. Substituting these values in the risk assessment calculation would result in ICRs of 1.1E-4 for gypstack workers and eliminate the concern for maintenance workers, since the measured exposure was slightly less than the background value established in the BRA (facility floors, concrete and asphalt pads and other structures provide some shielding).

The cumulative site baseline risk included all environmental media that are appropriate and, per guidance did not consider institutional controls (ICs) or worker patterns that would account for risk reduction. Actual current industrial exposures at the facility are lower due to ICs such as worker health and safety programs. The J.R. Simplot Company believes that the Don Plant facility is currently in compliance with all applicable OSHA and environmental requirements.

Occupational radiation exposures at the facility are below the maximum levels established by OSHA and by EPA Radiation Protection Guidance to Federal Agencies for Occupational Exposure to Radiation. Actual radiation exposures are a fraction of the maximum permissible levels. For example, OSHA has established a Maximum

Permissible Dose (MPD) for worker radiation exposure, which is a regulatory limit as to the dose which should not be exceeded without careful consideration of the reason for doing so (FR vol 52 no. 17). For whole body exposure the MPD is 5,000 mrem per year. Based on the results of the ground survey of gamma exposure, whole body radiation doses were estimated at 35 mrems per year for gypsum stack workers and 23 mrems per year (below background exposure) for maintenance workers.

In addition to the potential human health concerns discussed above, the draft ecological BRA identified fluoride in vegetation as a possible marginal concern. The potential exposure pathway consists of air deposition of particulate fluoride on, and/or adsorption of gaseous fluoride by vegetation. The habitat of concern for this pathway is not prevalent within the Simplot OU, therefore this exposure pathway is addressed for the Offsite OU (Section 3.3). However, sources of airborne fluoride within the Simplot OU are considered in this section.

Evidence of significant redistribution of EMF constituents in soil to other pathways was not indicated by the RI. The air, surface water and groundwater pathways were not linked to soils and solids at the Simplot OU with the exception of the slurry component of the gypsum stack which is discussed under groundwater.

The potential exposure pathways of external gamma radiation and incidental soil ingestion for current workers will be considered in the development of RAOs. These potential exposure pathways will also be considered, along with the inhalation of radon gas for future workers.

3.2.1.2 Groundwater

No current exposure pathways exist for groundwater within the Simplot OU. Although concentrations in certain locations in the shallow aquifer exceed the Safe Drinking Water Act primary MCLs for arsenic, selenium, gross alpha and nitrate and secondary MCLs for manganese and sulfate, groundwater is not used for drinking at the Don Plant and concentrations are below MCLs at the FMC and Simplot OU boundaries with the Offsite OU.

The BRA estimates a potential ICR due to future worker ingestion of shallow groundwater of 1.69E-3 for arsenic and 1.57E-4 for lead-210. The lead-210 activity is estimated in the BRA based upon gross alpha activity. RI studies indicate that the sporadic areas of elevated gross alpha activity are most likely due to the underlying volcanic rock of the Bannock Range. Hazard quotients of 8.6 for arsenic, 14.4 for fluoride, 1.3 for manganese and 1.3 for vanadium were calculated in the BRA for a future worker groundwater pathway.

Given that the area of MCL exceedances is primarily contained within those portions of the OU which are dedicated to active operations, and that the active operations effectively preclude residential development for the foreseeable future, RAOs will only be developed for potential future worker exposure. Further consideration of the potential for future worker exposure is provided below.

It should be noted that RI data indicate that an applied head is required for significant contribution from EMF facilities' source materials to groundwater. RI data indicate that the gypsum stack slurry application is the only current source of hydraulic head and the largest source of loading to groundwater within the Simplot OU. However, as a point of contrast, site specific data from well 318 downgradient of the East Overflow Pond show a dramatic decline in groundwater constituent concentrations during the RI monitoring period after discontinuing use of the pond and recovery of the head (Table 2.2-13). This transition exemplifies a situation where constituent levels in Site groundwater return to levels below MCLs following removal of hydraulic head. Thus, constituent levels in groundwater for an alternate industrial use do not appear to present a long term concern.

When evaluating the potential for future worker exposure, consideration should also be given to the current placement of production wells at Simplot. Due to the relatively low production capacity of the shallow zone, these wells are necessarily placed in the deeper aquifer where water quality is substantially better. Although production water from the Simplot OU wells is not used for drinking water, historical data and recent data from operation samples indicate that water from these wells meet the MCLs for the constituents of concern identified in the BRA.

3.2.1.3 Surface Water and Sediments

As explained in Section 2, surface water is not a pathway of concern for the EMF Site and therefore RAOs will not be developed for this medium.

3.2.1.4 Air

The BRA identified the exposure pathway of inhalation of EMF constituents by current workers as posing potential cancer risks in excess of 1.0E-6. For maintenance workers ICRs were estimated at 1.8E-6 for inhalation of cadmium, hexavalent chromium and arsenic; and 6.1E-6 for inhalation of polonium-210. For gypstack workers ICRs were estimated at 6.0E-6 for the same constituent group and 2.04E-5 for inhalation of polonium-210. The same risks as for the gypstack workers were estimated for future workers from the same constituents. The estimated future worker risks are identical to risks estimated for current workers, assuming future ambient air quality consistent with current FMC and Simplot operations. Although this assumption is not consistent, for the purposes of developing RAOs, both the current and future worker scenario will be considered.

It should be noted that in the draft BRA, exposure for gypstack workers was estimated based on air concentrations measured at Monitoring Station 2. Monitoring Station 7 is in close proximity to the gypstack and is therefore more representative of concentrations of constituents potentially inhaled by gypsum stack workers. Use of Station 7 air concentrations result in estimated ICRs to gypsum stack workers by inhalation of 3.2E-7 due to cadmium, hexavalent chromium and arsenic and 2.5E-6 due to polonium-210: both approximately one order of magnitude lower than estimated in the BRA.

With regard to future hypothetical residential exposure based on emissions associated with active operations, such a scenario is not consistent with the future land use conditions discussed earlier. Therefore, potential future residential exposure is not considered for the Simplot OU, however, both current and future residential exposures are considered in the development of RAOs for the Offsite OU.

The draft Ecological BRA identified deposition of fluoride on vegetation as a marginal concern. The predominant sources of airborne fluoride are within the Simplot OU, with the cooling towers being the largest contributor. However, as noted previously, potential impacts apply to the Offsite OU. Within the context of the FS, sources of fluoride will be evaluated within the Simplot OU, while the discussion of potential impacts and need for RAOs is presented in the Offsite OU Section 3.3.

3.2.2 Applicable or Relevant and Appropriate Requirements

The preliminary identification of Applicable or Relevant and Appropriate Requirements (ARARs) was presented in the Identification of Candidate Technologies Memorandum. Under Section 121(d)(2)(A) of CERCLA, remedial actions for clean-up of hazardous substances must attain levels promulgated under any pertinent federal or state requirements or an ARAR waiver must be obtained. This document continues the evaluation of ARARs for the EMF Site in conjunction with the review and refinement of the preliminary RAOs for the Simplot OU.

The Simplot OU is primarily comprised of the operating area of the Don Plant which is actively regulated by various state and federal environmental programs, including:

- The Clean Air Act and the State and Federal regulations that stem from it including air emission permits, state implementation plans, National Ambient Air Quality Standards (NAAQS), National Emissions Standards for Hazardous Air Pollutants (NESHAPs), and New Source Performance Standards (NSPS).

- Permits required by the State of Idaho regulating waste disposal and the application of treated wastewater for agricultural irrigation.

- Worker protection standards as promulgated by the Occupational Safety and Health Act (OSHA).

- Hazardous waste and land disposal regulations as promulgated in the Resource Conservation and Recovery Act (RCRA).

A list of potential ARARs reviewed for the EMF Site is contained in Table 3.2-1 (presented at the end of Section 3.2). The discussion presented below evaluates ARARs for the Simplot OU for each environmental medium.

3.2.2.1 Soils and Solids

The RI and BRA indicate that exposure concerns for soils and solids are primarily related to the active operations of the Don Plant. Specifically, the BRA identifies potential risks to site workers through incidental soil ingestion. As stated above, the facility operations are currently regulated by federal and state OSHA programs. For those portions of the Simplot OU which are part of the active operations, OSHA establishes protection standards for the workplace. These regulations (29 CFR 1910, subpart 2, Limitations On Exposure To Toxic Hazardous Substances) may be relevant to the determination of a clean-up level

(in the absence of other standards). In this case, OSHA standards can be classified as "To Be Considered" (55 FR 8679-80).

Solid waste disposal and treatment standards as contained in RCRA could be considered as location- and action-specific ARARs depending upon the selection of remedial actions. However, the Solid Waste Amendments of 1984 identify solid waste from the extraction, benefication, and processing of ores and minerals, including phosphate rock as exempt from certain RCRA subtitle regulations. In addition, the primary source materials of gypsum and phosphate ore do not exhibit hazardous waste characteristics.

The BRA identifies external exposure to gamma radiation from contaminants in soil and solids as a potential risk to site workers in the Simplot OU. Radium-226 has been identified in the RI as the radioisotope of greatest concern with respect to human health and the environment. Although, there are no applicable requirements, Protection Standards for Uranium and Thorium Mill Tailings (40 CFR Section 192) were considered. The standards state that an average concentration of radium-226 shall not exceed 5 pCi/g in excess of background within the upper 15 cm of soil. These chemical-specific standards were originally promulgated for the cleanup of uranium and thorium mill wastes. Given that these standards apply to cleanup of closed facilities, they are not relevant and appropriate for the active industrial setting within the Simplot OU. However, these standards will be considered relative to the Offsite OU. These standards would also be relevant and appropriate for consideration at time of Don Plant closure.

OSHA has established a Maximum Permissible Dose for worker exposure of 5,000 mrem per year for whole body exposure. In contrast, exposure rates estimated in the BRA correspond to whole body exposure radiation doses of 73 mrems per year for gypsum stack workers and 49 mrems per year for maintenance workers. Radiation levels measured at the Don Plant, which were not used in the BRA, indicate that actual potential exposure rates are closer to 35 mrems per year for gypstack workers and 23 mrems per year (below background) for maintenance workers. Although not applicable, these criteria are pertinent and should be considered in the development of remedial alternatives.

3.2.2.2 Groundwater

The BRA concluded that there are no current risks to human health or the environment related to the groundwater pathway within the Simplot OU. However, the RI indicates EMF related constituents are present in shallow groundwater at concentrations above MCLs within the Simplot OU. However, there is no current or planned use of the impacted groundwater as a source of potable water. Given the lack of an exposure pathway, MCLs are not an ARAR for current worker scenarios.

MCLs should be identified as a potential chemical-specific ARAR for hypothetical future worker exposure. However, current Simplot plans indicate that the Don Plant will continue to operate for several decades; and RI data indicate that constituent concentrations in groundwater within the Simplot OU would diminish rapidly at the time of facility closure.

3.2.2.3 Air

As noted previously, air emissions from the Don Plant are regulated by the Clean Air Act (CAA) and corresponding state of Idaho operating permits. The Don Plant is currently proceeding with CAA Title V requirements which call for a detailed source/emission inventory. The Title V process ultimately requires evaluation of emissions and appropriate controls for all inventoried emission sources. The requirements of the CAA and the State of Idaho Code are directly applicable to emissions within the Simplot OU which may pose a risk to human health. As also noted previously, OSHA requirements for worker exposure to airborne contaminants should also be considered.

Fluoride emissions from the Don Plant are regulated by existing State permits. Fluoride emissions from the wet process phosphoric acid industry and particularly cooling towers, which are the primary source in the Simplot OU, are currently under evaluation by EPA under the requirements of the CAA to develop the Maximum Achievable Control Technology (MACT) for these emissions. As noted in Section 2.2.2.2, the principal fluoride compounds emitted from the cooling towers are silicon tetrafluoride and fluorosilicic acid, which are not designated as hazardous substances under CERCLA. Therefore, any operational or control technology changes are more appropriately addressed under the CAA rather than CERCLA.

The RI and BRA indicate that emissions from the Simplot facility do not pose risks to plants and wildlife in the Simplot OU. Fluoride concentrations on vegetation were identified in the BRA as a marginal potential concern for wildlife. Fluoride emissions from the Simplot OU contribute to the observed fluoride concentrations in Offsite OU vegetation. The Idaho Code contains specific regulations for fugitive dust control, fugitive emission controls and fluoride emission controls. Emission limitations for phosphate fertilizer plants are included in the Idaho Code. Fluoride concentrations in forage are also regulated by the Idaho Code. State regulations governing emissions from the Simplot OU are applicable for active operations. The State regulations for forage fluoride concentrations are only applicable to certain agricultural settings, which are not present within the Simplot OU.

3.2.3 RAOs

RAOs for the various exposure pathways and contaminants of concern associated with current and possible future industrial settings within the Simplot OU are provided below. Many of the estimated risks for the exposure pathways identified above are estimated to be within the acceptable range of 10^{-6} to 10^{-4} (OSWER Directive 9355.0-30). Use of PRGs, MCLs and RBCs as screening tools for RI data allowed for identification of sources and source areas contributing to the estimated risks. The PRGs, MCLs and RBCs will continue to serve as an aid along with ARARs during the development and screening of alternatives.

Although the BRA estimated risks for future residential scenarios within the Simplot OU, such scenarios have a very low probability. RAOs for future use are therefore based upon an industrial scenario. Current and future residential risks are addressed through the development of RAOs for the Offsite OU. In addition, since no ecological risks were identified for the Simplot OU, the following RAOs address human health concerns only.

Soils and Solids within Simplot OU

Within the Simplot OU the current potential pathways of concern are incidental worker ingestion of gypsum and/or soils mixed with gypsum or ore and exposure to external radiation originating from ore and gypsum. For future workers the hypothetical pathway of inhalation of radon gas were also identified as a possible concern. Inhalation of radon gas would only be a potential concern if future workers were in poorly ventilated subgrade structures constructed in areas of gypsum or ore accumulation. There are no plans to construct such structures.

Willing to construct radon resistant structure

Specific constituents in soils with concentrations greater than the PRGs under an industrial setting are arsenic and beryllium. Lead-210 and radium-226 activities were also estimated to be above industrial RBC levels. These constituents are consistent with those identified as a potential concern for incidental ingestion in the BRA. The primary concerns for external radiation are related to the gypsum stack or other areas where ore or gypsum are integrated with the soils. In addition to the direct placement of these materials, soils within the OU are also affected by deposition of air emissions. However, within the Simplot OU soils and solid materials were not found to significantly contribute constituents to the air, surface water or groundwater pathways (although, as discussed for groundwater, application of gypsum in slurry does contribute to the groundwater pathway). Therefore, the general site-wide RAOs for soils and solids are modified to the following specific RAOs for current industrial exposure:

> Prevent external exposure to radionuclides in soils at levels that pose cumulative estimated excess risks above the range of 10^{-6} to 10^{-4}, or site-

specific background levels where that is not practicable. Due to the technical uncertainties associated with radionuclide risks, PRGs associated with remediation to ARARs and the upper end (10^{-4}) of the risk range should also be evaluated in the FS (for all appropriate scenarios).

Prevent ingestion or inhalation of soils containing radionuclides, arsenic or beryllium at levels that pose cumulative estimated excess risks above 10^{-6} to 10^{-4} or site-specific background levels where that is not practicable.

Prevent release and migration of radionuclides, arsenic or beryllium from source piles to soils above levels that, under current conditions, may pose unacceptable cumulative excess risk to humans or have adverse impacts on the environment. The remediation goals to be used in the FS should begin by looking at the feasibility of achieving the protective end of the risk range (10^{-6} excess risk), or site-specific background levels where that is not practicable.

With regard to future worker exposure to soils and solids, similar potential concerns would exist. The above RAOs would be modified to the following:

Prevent ingestion, inhalation, direct contact, release or migration of radionuclides, arsenic or beryllium in source materials that, in the event of closure or changed future operating conditions, pose an unacceptable risk to human health or have adverse effects on the environment.

Given the current industrial setting within the Simplot OU, the planned life of the facility and the lack of active transport from soils and solid materials to offsite areas, any potential ecological concerns would be addressed through the above RAOs.

Potential ARARs which should be considered in the development and screening of remedial alternatives for Simplot OU soils and solid materials are limited. The materials gypsum and phosphate ore are Bevill exempt and also do not exhibit hazardous waste characteristics. Most ARARs would relate to active operations and worker exposure. Correspondingly, OSHA requirements were identified as TBC to address worker exposure.

Groundwater Within the Simplot OU.

There are no current exposure pathways for groundwater within the Simplot OU. Future groundwater risks could be associated with worker exposure to arsenic, selenium, gross alpha, nitrate, fluoride, manganese and lead-210, if new shallow wells were constructed for drinking water supply. Given this current setting the following RAO would apply to future industrial scenarios differing from current usage:

> Prevent the potential for ingestion of groundwater with levels exceeding primary MCLs for arsenic, selenium, gross alpha and nitrate; and the secondary MCLs for fluoride and manganese.

With regard to environmental transport of EMF related constituents via the groundwater pathway, attenuation and advective mixing result in concentrations below MCLs within the Simplot OU. Influenced Site waters ultimately discharge to the Portneuf River. The Site load of constituents entering the Portneuf River via the groundwater pathway is small in comparison to the background contribution within the same area and no significant ecological risks are associated with EMF constituents in the waters or sediments of the Portneuf River.

Air Within the Simplot OU.

Risks were estimated in excess of 1.0E-6 for inhalation of cadmium, hexavalent chromium, arsenic and polonium-210 for both current and future workers. Based on RI monitoring and modeling results the primary sources of these constituents of concern are the ongoing permitted emissions from both the Don Plant and FMC facility. With regard to future workers the BRA made the assumption that future emissions would be equivalent to current emissions even though operations would cease.

Based on the RI and BRA findings the following RAO for air within the Simplot OU would apply to both current and future workers.

> Prevent the inhalation of cadmium, hexavalent chromium, arsenic and polonium-210 at levels which would result in an ICR in excess of the 10^{-6} to 10^{-4} range.

Air emissions from active operations, as noted previously, are ultimately controlled by the CAA and specific State requirements. In addition, controls or modifications related to economic/operational management must also be considered. The 1991 conversion of the Don Plant ore handling and preparation to a wet operation is a primary example of the interrelationship of environmental, operational and economic considerations. These dynamics are expected to continue to influence operation. A current example is the pilot program for fluosilicic acid recovery from the vapor phase in the phosphoric acid plant evaporator units. This program, although not regulatorily mandated, is expected to result in a reduction in fluoride reporting to the cooling water streams. The factors of economic/operational management should be considered along with the regulatory dynamics when evaluating options for achieving the air RAOs.

TABLE 3.2-1

SUMMARY OF POTENTIAL LOCATION-SPECIFIC ARARs
(combined State and Federal)

LOCATION	REQUIREMENT	DESCRIPTION	COMMENTS
Floodplain	Executive Order 11988 40 CFR Part 6, App. A RCRA Location Standards 40 CFR §264.18	The potential effects of any action taken in a 500-year floodplain must be evaluated to ensure that planning and decisions making reflect consideration of flood hazards and floodplain management. Hazardous waste units located in 100-year floodplains must be designated, operated, and maintained to prevent washout of hazardous wastes.	Portions of the Simplot OU are located within a 500-year or 100-year floodplain. These requirements are applicable to potential actions conducted in floodplain areas.

TABLE 3.2-1

SUMMARY OF POTENTIAL LOCATION-SPECIFIC ARARs
(combined State and Federal)

LOCATION	REQUIREMENT	DESCRIPTION	COMMENTS
Wetlands	Executive Order 11990, 40 CFR Part 6, App. A Clean Water Act 40 CFR §230	Actions must be managed to avoid adverse effects, minimize harm, and, to the extent practicable, enhance wetlands. Dredging/filling of wetlands are prohibited unless: (1) there is no practical alternative; (2) the discharge of dredged material will not violate state water quality standards, toxic efficient standard, jeopardize endangered/threatened species or cause or contribute to a significant degradation of water quality; and/or (3) adverse effects can be minimized.	The Simplot OU does not contain any wetland areas which could be effected by actions.

TABLE 3.2-1

SUMMARY OF POTENTIAL LOCATION-SPECIFIC ARARs
(combined State and Federal)

LOCATION	REQUIREMENT	DESCRIPTION	COMMENTS
Rivers/Streams	Rivers and Harbors Act	Diversion, channeling or other activities affecting regulated bodies of water may require consultation with Corps of Engineers.	These regulations are not applicable because no process or storm water from the Simplot OU discharges into regulated bodies of water.
	Fish and Wildlife Coordination Act 40 CFR §6.302	Remedial actions taken in areas that may affect streams and rivers must be undertaken in a manner that protects fish and wildlife.	
	Fish and Wildlife Conservation Act 40 CFR §83	Remedial actions in areas containing fish and wildlife must promote conservation of fish and wildlife.	
Historic Property	National Historic Preservation Act 40 CFR §6.301 (b), 36 CFR §800	Remedial actions within sites listed on the National Registry of Historic Places must minimize adverse effects on the property.	No historic or archaeologically significant areas are identified within the Simplot OU.
	Archeological and Historic Preservation Act 40 CFR §6.301 (c)	Remedial actions within sites containing historical or archaeological data must minimize adverse effects.	
Critical Habitat	Endangered Species Act 50 CFR Parts 17 and 401	Remedial actions in critical habitats must conserve endangered or threatened species and their habitat.	No critical habitat areas are identified within the Simplot OU.

TABLE 3.2-1

SUMMARY OF POTENTIAL LOCATION-SPECIFIC ARARs
(combined State and Federal)

LOCATION	REQUIREMENT	DESCRIPTION	COMMENTS
Air	Clean Air Act 40 CFR Part 50	Establishes National Ambient Air Quality Standards (NAAQS) for the protection of public health and welfare; establishes criteria for NAAQS Attainment and Non-Attainment Areas.	Pocatello is a NAAQS Non-Attainment Area for PM-10. Under the CAA, major sources must obtain emission offsets of greater than one-to-one, achieve the "lowest achievable emission rate" (LAER) and be on schedule for the non-attainment area to come into attainment. These regulations are applicable to major sources (stationary sources emitting more than 100 tons per year of PM10 or any regulated constituent) or to major modifications to existing sources. Operations at Simplot are regulated by Prevention of Significant Deterioration (PSD) permits to meet these requirements. Emissions from CERCLA activities are unlikely to meet the threshold for "major source," so it is unlikely these requirements will be applicable or relevant and appropriate to the cleanup. (EPA,1989).

TABLE 3.2-1

SUMMARY OF POTENTIAL LOCATION-SPECIFIC ARARs
(combined State and Federal)

LOCATION	REQUIREMENT	DESCRIPTION	COMMENTS
Waste Disposal Facility/ Hazardous Waste Storage	Resource Conservation and Recovery Act 40 CFR 268 State Requirements I.C. §40 7601 et seq. I.C. §16.01.2800	Restricts the land disposal of hazardous waste and specifies treatment standards. Establishes criteria for solid waste disposal facilities Establishes criteria for storage, disposal or accumulation of hazardous waste; must not be near state waters unless adequate measures and controls are taken.	The RI indicates there are no listed or characteristic hazardous wastes generated or disposed of at the facility which are of concern and Don Plant process wastes are Bevill exempt from subtitle C regulations. Since an explicit and formal determination has been made to exempt certain mining wastes from Subtitle C requirements of RCRA, those requirements are generally not relevant and appropriate for Bevill exempt wastes. (EPA, 1988). The quantity and characteristics of the materials at the Simplot OU make such standards inappropriate for the Simplot OU.

TABLE 3.2-1

SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARs
(combined State and Federal)

CONTAMINANT/MEDIA	REQUIREMENT	DESCRIPTION	COMMENTS
Groundwater	Safe Drinking Water Act 42 U.S.C. §300 et seq. Pub. L. 93-523	Goal of the Act is to protect human health by protecting the quality of drinking water. The Act authorizes the establishment of drinking water standards.	These regulations are not applicable for the current Simplot OU setting. There is currently no use of groundwater as a drinking water source at the Simplot OU. Potential future changes in land use at the facility would require constituent levels to be set at MCLs if wells with contaminated groundwater were to be used as a drinking water source. It is highly unlikely land use will change from an industrial facility setting under future land use scenarios. MCLs are not appropriate for the Simplot OU because, due to site specific circumstances, there is no actual, planned or potential use of the groundwater for drinking (EPA, 1988).
	40 CFR Part 141	Establishes primary maximum contaminant levels (MCLs) and maximum contaminant goals (MCLGs)that are health based standards for public water systems.	
	40 CFR Part 143	Establishes secondary MCLs that are welfare-based standards for public water systems.	
	State Regulations IDAPA 16.01.02299	General groundwater criteria. Sets Maximum Allowable Concentrations (MACs).	

TABLE 3.2-1

SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARs
(combined State and Federal)

CONTAMINANT/MEDIA	REQUIREMENT	DESCRIPTION	COMMENTS
Surface Water	Clean Water Act 33 U.S.C. § 1251 - 1376	Provides for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.	These regulations are not applicable. Process water or storm water from the Simplot OU does not discharge into the Portneuf River. Contaminated groundwater that naturally flows into surface water is not considered a point source discharge (EPA, 1988).
	49 CFR Part 131 Quality Criteria for Water	Federal Water Quality Criteria (FWQC) are guidelines from which States determine their water quality standards. Criteria are developed for the protection of human health and aquatic life.	
	40 CFR Part 129	Establishes effluent standards or prohibitions from specific toxic pollutants.	
	40 CFR Part 122, 125	Requires permits for the discharge of pollutants from any point source into waters of the United States. The Act defines a point source as any discernable, confined or discrete conveyance. from which pollutants are or may be discharges. Effluent limitations must protect beneficial uses of water.	

TABLE 3.2-1

SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARs
(combined State and Federal)

CONTAMINANT/MEDIA	REQUIREMENT	DESCRIPTION	COMMENTS
Air	Clean Air Act 40 CFR Part 50	Regulates emissions to protect human health and the environment. Establishes National Emission Standards for Hazardous Air Pollutants (NESHAPs) for protection of public health and welfare.	No emission sources associated with the Simplot OU cleanup have been identified. NESHAPs apply to particular types of equipment at particular facilities, none of which are associated with the cleanup activities that could reasonably be anticipated to occur at the Simplot OU. Since the standards of control are intended for a specific type of source rather than all sources of that pollutant, NESHAPs are not relevant and appropriate for CERCLA cleanups (EPA, 1989). Standards applicable to ongoing operations would not be applicable or relevant and appropriate for the remedial action.

TABLE 3.2-1

SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARs
(combined State and Federal)

CONTAMINANT/MEDIA	REQUIREMENT	DESCRIPTION	COMMENTS
Hazardous Waste	Resource Conservation and Recovery Act 42 U.S.C. §§6901-6987 40 CFR 261 (b)(7)	Identifies those solid wastes which are subject to regulation as hazardous waste under 40 CFR Parts 262-265, 268 and Parts 124, 270, 271. Lists exclusions from RCRA subtitle C requirements	The Solid Waste Amendments of 1984 identify solid waste from the extraction, benefication, and processing of ores and minerals, including phosphate rock as potentially exempt from certain subtitle regulations. The RI indicates there are no process-related listed or characteristic hazardous wastes identified at the Simplot OU, subject to RCRA requirements. Note that these regulations apply only to hazardous wastes. Since an explicit and formal determination has been made to exempt certain mining wastes from Subtitle C requirements of RCRA, those requirements are generally not relevant and appropriate for Bevill exempt wastes (EPA, 1988, 1989). In the case of the Simplot OU, the quantity and characteristics of the materials make such standards inappropriate. State regulations on solid waste treatment and disposal may be applicable to Don Plant process wastes if Don Plant process wastes are treated and disposed. Due to the volume of materials generated, however, such standards may not be relevant and appropriate.

TABLE 3.2-1

SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARs
(combined State and Federal)

CONTAMINANT/MEDIA	REQUIREMENT	DESCRIPTION	COMMENTS
	Occupational Safety and Health Act 29 U.S.C. §§ 651-678	Regulates worker health and safety. Sets general industry standards for exposure to chemicals and health/safety training requirements for workers at hazardous wastes sites.	EPA notes that there are some standards in OSHA that set contaminant levels for the workplace (29 CFR part 1910, subpart Z, limitations on exposure to toxic hazardous substances) that may be relevant to the determination of a cleanup level (in the absence of other standards). In this case, OSHA standards can be classified as "To Be Considered" (TBCs) (55 FR 8679-80).

TABLE 3.2-1

SUMMARY OF POTENTIAL ACTION-SPECIFIC ARARs
(combined State and Federal)

CONTAMINANT/MEDIA	REQUIREMENT	DESCRIPTION	COMMENTS
Groundwater/Surface Water	State Regulations IDAPA 16.01.2250	Establishes specific water quality standards that are based on the use and designations assigned to a particular body of water.	There are no discharges from the Simplot OU to regulated surface waters; storm water runoff is treated and then sold as irrigation water under a State of Idaho Land Application permit. Contaminated groundwater that naturally flows into surface water is not considered a point source discharge (EPA, 1988). These standards are therefore neither applicable nor relevant and appropriate for the Simplot OU.
	IDAPA 16.01.2300	Establishes water quality criteria for point source discharges to special resource waters and tributaries; establishes restrictions on discharges.	
	IDAPA 16.01.2301	Allows exemptions for certain activities that result in water quality violation.	
	IDAPA 16.01.2440	Regulates discharge of nonsewage wastewater from treatment facilities.	

TABLE 3.2-1

SUMMARY OF POTENTIAL ACTION-SPECIFIC ARARs
(combined State and Federal)

REMEDIAL ALTERNATIVE	REQUIREMENT	DESCRIPTION	COMMENTS
	Resource Conservation and Recovery Act 42 U.S.C. §§6901-6987	Identifies those solid wastes which are subject to regulation as hazardous waste under 40 CFR Parts 262-265, 268 and Parts 124, 270, 271.	The Solid Waste Amendments or 1984 identify solid waste from the extraction, benefication, and processing of ores and minerals, including phosphate rock as potentially exempt from subtitle C regulations. There are wastes at the Simplot OU that are generated through active operations which are managed in compliance with relevant regulations. The RI indicates that within the Simplot OU there are no listed or characteristic hazardous substances which were identified as source materials through the CERCLA process. Since an explicit and formal determination has been made to exempt certain mining wastes from Subtitle C requirements of RCRA, those requirements are generally not relevant and appropriate for Bevill exempt wastes (EPA, 1988). In the case of the Simplot OU, the quantity and characteristics of the materials make such standards inappropriate. State regulations on solid waste treatment and disposal may be applicable if solid waste is disposed in connection with the Simplot OU.
	40 CFR 261 (b)(7)	Lists exclusions from RCRA subtitle C requirements.	

TABLE 3.2-1

SUMMARY OF POTENTIAL ACTION-SPECIFIC ARARs
(combined State and Federal)

REMEDIAL ALTERNATIVE	REQUIREMENT	DESCRIPTION	COMMENTS
Remedial actions to address modifications to any existing sources.	Clean Air Act 40 CFR Part 60	Establishes New Source Performance Standards (NSPS) for new and modified sources. The standards reflect the degree of emission reduction achievable through demonstrated best technology, considering costs and a number of other factors.	These standards are source-specific and are therefore not generally considered applicable to CERCLA cleanup actions (EPA, 1989). No specific sources associated with remediation have been identified that are sufficiently similar to a pollutant and source category regulated by an NSPS. These standards are therefore neither applicable nor relevant and appropriate for the Simplot OU. The J.R. Simplot Company believes ongoing operations at the Don Plant already comply with all applicable NSPS.
	40 CFR Part 61 Subpart R	Contains national emission standards for radon emissions from phosphogypsum stacks.	This standard applies a radon-222 standard to inactive phosphogypsum stacks. That standard does not apply to active phosphogypsum stacks such as those at the Simplot OU. The standard contains certain requirement for active phosphogypsum stacks (relating to monitoring and removal of materials from active stacks). The J.R. Simplot Company believes those standards are already met. The standard would not be relevant and appropriate for reasonably foreseeable cleanup activities in the Simplot OU. In addition, since EPA has made a formal determination that the standard does not apply to active stacks, the standard is not relevant and appropriate for active stacks (EPA, 1988).

TABLE 3.2-1

SUMMARY OF POTENTIAL ACTION-SPECIFIC ARARs
(combined State and Federal)

REMEDIAL ALTERNATIVE	REQUIREMENT	DESCRIPTION	COMMENTS
	Endangered Species Act 16 U.S.C. 1531-1536 50 CFR Part 402	Remedial actions in critical habitats must conserve endangered or threatened species and their habitat.	There are no endangered or threatened or endangered species or critical habitat areas identified within the OUs.
	Rivers and Harbors Act 33 U.S.C § 403	Diversion, channeling or other activities affecting regulated bodies of water may require consultation with Corps of Engineers.	No diversion activities will be required for remedial actions at the Simplot OU.
	Fish and Wildlife Coordination Act 40 CFR § 6.302 Fish and Wildlife Conservation Act 40 CFR §83	Remedial actions taken in areas that may affect streams and rivers must be undertaken in a manner that protects fish and wildlife. Remedial actions in areas containing fish and wildlife must promote conservation of fish and wildlife	No regulated bodies of water will be affected by remedial actions taken at the Simplot OU.

TABLE 3.2-1

SUMMARY OF POTENTIAL ACTION-SPECIFIC ARARs
(combined State and Federal)

REMEDIAL ALTERNATIVE	REQUIREMENT	DESCRIPTION	COMMENTS
Remedial actions to address worker safety.	Protection Standards for Uranium and Thorium Mill Tailings 40 CFR 192 Subpart A	Standards for the Control of Residual Radioactive Materials from Inactive Uranium Processing Sites	These standards are developed for closure of inactive facilities. They are not applicable or relevant and appropriate to the active operations comprising the Simplot OU.
	Subpart B	Sets concentration limits for residual radioactive materials from inactive uranium processing sites	
Remedial actions to address worker safety.	Occupational Health and Safety Act 29 CFR 1910.96	Contains radiation exposure limits and measurements for occupational safety, specifically Maximum Permissible Dose (MPD). The MPD equivalent for whole body exposure is 5,000 mrem.	These standards would be applicable for workers at the Don Plant.
	29 CFR 1910.96 (4)	Contains survey procedures for potential airborne radioactivity in enclosed areas in excess of 30 pCi/l.	These standards would be applicable to address worker safety in future alternative industrial settings.

TABLE 3.2-1

SUMMARY OF POTENTIAL ACTION-SPECIFIC ARARs
(combined State and Federal)

REMEDIAL ALTERNATIVE	REQUIREMENT	DESCRIPTION	COMMENTS
	State Requirements IDAPA 16.01.01.01111	Contains primary and secondary air quality standards for fluoride concentrations in ambient air which result n total fluoride content in vegetation used for feed or forage.	The air quality standards are not applicable to the Simplot OU because they constitute state-wide emission standards rather than emission limits from stationary sources. Whether the standards are relevant and appropriate will depend upon site-specific factors. For example, the state fluoride standard is not relevant and appropriate because it is intended to address agricultural feed sources which are not present within the Simplot OU. For the same reason, the fluoride standard is not applicable to the Simplot OU. While in some circumstances air quality standards might be relevant and appropriate to CERCLA cleanup activities, they would not apply as ARARs to ongoing operations of the Simplot facility.
	IDAPA 16.01.01402. 01	Air quality regulations includes emission limitations for Phosphate Fertilizer Plants including fluoride emissions.	Emission limitations for phosphate Fertilizer Plants apply to ongoing operations and are not applicable to cleanup activities. The standard is based upon the quantity of phosphate ore produced and is therefore neither relevant nor appropriate for cleanup actions.
Disposal of solid wastes	IDHW Title I, Chapter 6 01.60001 et seq.	Contains regulation on the handling and disposal of solid waste.	These regulations may be applicable for the treatment and disposal of Bevill exempt wastes.

TABLE 3.2 - 1

SUMMARY OF TO BE CONSIDERED MATERIALS

ISSUE/AREA	TITLE	DESCRIPTION	COMMENT
Soils	Draft Soil Screening Guidance	Provides methods for establishing screening levels that incorporate site-specific data and assumptions for certain pathways.	To be considered when evaluating ingestion of soil and inhalation of volatile and fugitive dust pathways for Simplot and off-site OUs.

3.3 OFFSITE OPERABLE UNIT

As noted previously, potential human health risks associated with the EMF Site for the Offsite OU were estimated to exceed the upper bound of the 10^{-6} to 10^{-4} incremental cancer risk (ICR) range in the draft BRA. Risks to current residents are driven by external radiation exposure from surface soils. However, the estimated risks are not much greater than risks associated with background conditions. Risks to hypothetical future residents were generally of the same order of magnitude as for current residents and were due to the same pathways and constituents. The largest risks were estimated in the areas immediately north of the FMC and Simplot OUs. A marginal ecological risk due to fluoride in vegetation was also identified. Given these considerations, the preliminary site-wide RAOs originally presented in the Candidate Technology Memorandum have been evaluated for appropriateness to the Offsite OU. In addition, preliminary ARARs are provided for the Offsite OU. Any modifications to the site-wide RAOs are presented below for each environmental medium in conjunction with a discussion of specific exposure pathways, contaminants and sources which have been considered.

3.3.1 Exposure Pathways of Concern

The Offsite OU is the area immediately surrounding the FMC and Simplot OUs and is primarily composed of commercial, agricultural (BLM, tribal and private lands) and residential areas. The following discussion of exposure pathways is organized by environmental medium and presents potential exposure pathways within a medium for current and hypothetical future residents in the Offsite OU. Some of these pathways may be combined or eliminated later in the analysis of RAOs or in the FS. Given the boundaries of the FMC and Simplot OUs relative to the offsite areas, the primary concerns are tied to airborne distribution of EMF constituents and the resultant soil concentrations. As noted previously, surface water and groundwater within the Offsite OU are not areas of current risk or potential future risk from EMF activities.

3.3.1.1 Soils and Vegetation

As summarized in Section 2.3.3.1, the dominant exposure pathway of potential concern for current and future residents in the Offsite OU is external radiation exposure. The RME ICRs for current residents due to external gamma radiation were estimated from 0 to 4.2E-4 for current residents due to radium-226, which was not measured in soil but was assumed to be present at activities equal to uranium-238. The risks are comparable to the estimated background risk for radiation exposure of 4.77E-4.

These findings of risk assessment do not appear to be consistent with the findings of the RI soil analytical data presented in Section 2.3.1.1. In particular, the activities of uranium-238 measured in samples used to estimate current residential risk were all below

the representative level derived by EPA. The risk assessment also included a figure (Figure 5-26) which indicated that an area of ICR of approximately 1E-3 due to radium-226 extended several miles to the north of the EMF facilities, and also extended up to two miles in all other directions. This is not supported by the soils data which show uranium-238 activity (and therefore radium-226 activity) to be below representative levels in these areas (Figure 2.3-11). The BRA therefore estimates incremental risks for constituents which are below representative levels. Areas of estimated elevated radium-226 activities relative to representative levels in Offsite OU surface soils potentially due to air emissions from the EMF facilities is limited to areas adjacent to the FMC and Simplot OUs (Section 2.3.1.1). This interpretation is further supported by the Aerial Gamma Radiation Survey, which was used in the BRA to estimate worker exposures, but was not used for offsite areas.

The BRA also identified risks to current residents due to incidental ingestion of soil containing radionuclides with estimated ICRs ranging from 0 to 7.96E-6 primarily due to lead-210. However, the BRA appears to estimate the risk using the sum of all concentrations measured rather than using the maximum concentration. Use of the maximum soil concentration, which is correct procedure for risk assessment results in an estimated risk 28% lower than presented in the BRA. In addition, as discussed in Section 2.3.1.1, the representative level for lead-210 was estimated by EPA based on an incomplete dataset. Use of the complete dataset increases the representative level from 3.58 to 6.36 pCi/g. Use of the recalculated value for lead-210 eliminates risks for this pathway.

Incremental cancer risks to current residents due to exposure to chemical carcinogens were estimated in the range 1.2E-6 to 2.8E-5 for the RME case due to arsenic and beryllium. These incremental risks are also comparable to the estimated background risk from chemical carcinogens of 8.76E-5, but an order of magnitude less than background risks from all pathways. As with the radionuclide risks, chemical carcinogenic risks appear to be estimated based on the sum of the concentrations measured in each area, rather than the maximum concentrations. Use of maximum concentrations, which is correct risk assessment procedure, reduces the estimated risks by 15 to 55%. Comparison of the soil sampling locations used to estimate risks to current residents (Figure 2.3-20) with the locations where arsenic and beryllium concentrations were measured above representative levels (Figures 2.2-4 and 2.2-5, respectively) show that arsenic was below the representative level at all relevant locations and beryllium was below the representative level at all relevant locations with one exception; sample location 315-2C in Residential Area 7 where a concentration of 1.1 mg/kg was measured compared to the background value of 1.0 mg/kg. In addition, a stochastic uncertainty analysis of the homegrown fruit and vegetable pathway (Sciences International Inc., 1995) found that risks were substantially lower than the RME case values estimated in the BRA.

For non-carcinogenic effects the BRA found that for residents who do not consume homegrown produce, RME IHQs did not exceed one in any area. For residents who do consume homegrown produce IHQs were estimated between 2 and 4.5, primarily due to cadmium. Risks due to cadmium appear to be overestimated by 24 to 45% in the BRA due to the use of the sum of concentrations measured for each area, rather than the maximum concentration. In addition, site specific data used to estimate the soil-to-plant uptake factor for cadmium, which was not used in the BRA indicate that the factors used in the BRA overpredict the measured cadmium plant concentrations by a factor of 15. The stochastic uncertainty analysis of the homegrown fruit and vegetable pathway discussed earlier found that non-carcinogenic risks are below a level of concern for current residents.

For future residents in the Offsite OU estimated risks were generally of the same order of magnitude as for current residents and were due to the same pathways and constituents. An additional pathway evaluated for future residents was consumption of homegrown beef with elevated levels of fluoride. The risks estimated for this pathway are likely overpredicted due to uncertainties and a series of conservative assumptions regarding soil to plant uptake factors, plant to muscle transfer and cattle raising practices. The largest risks were estimated for the area immediately to the north of the FMC and Simplot OUs. Much of this area is committed to the City of Pocatello sewage treatment plant and sewage sludge land application area, and the Chevron Tank Farm. In addition, many of the samples on which the high risk estimates were based were collected from the Interstate 86 Right-of-Way.

3.3.1.2 Groundwater

As discussed in Section 2.3.3.2, no groundwater exposure pathway exists for current residents in the Offsite OU. In addition, there was no incremental cancer risk identified for hypothetical future residents in the Offsite OU. This is because affected groundwater does not migrate to the Offsite OU. Constituent concentrations diminish to levels less than MCLs within the FMC and Simplot OUs and the Portneuf river ultimately acts as a barrier to offsite migration. Therefore, the groundwater pathway is eliminated from further consideration in the Offsite OU.

3.3.1.3 Surface Water and Sediments

As discussed in Section 2.3.2.3, surface water and sediments are not pathways of concern for the EMF Site. Therefore, these pathways will not be considered in the development of the RAOs.

3.3.1.4 Air

As summarized in Section 2.3.3.4, the current potential exposure pathway of concern for human health for the air pathway is inhalation of airborne contaminants. A similar potential pathway was identified for hypothetical future residents. Estimated incremental chemical cancer risks to both current and future residents due to inhalation of airborne contaminants within the Offsite OU ranged from 7.2E-7 to 2.2E-6 for the RME case, and from 1.1E-7 to 4.4E-7 for the CT case, primarily due to cadmium and chromium (VI). Estimated incremental cancer risks to current and future residents due to radiological activities in the Offsite OU ranged from 2.9E-6 to 1.1E-5 for the RME case, and from 6.3E-7 to 2.19E-6 for the CT case, primarily due to polonium-210.

Although the hypothetical future resident scenarios presented in the BRA assume future residents adjacent to the boundaries of the FMC and Simplot OUs, much of that area is currently committed to the other activities, such as the City of Pocatello sewage treatment land and its associated sewage sludge land application area, and the Chevron tank farm.

open ended. not clear.

3.3.2 Applicable or Relevant and Appropriate Requirements

The preliminary identification of ARARs was presented for the FMC OU and Simplot OU in Sections 3.1.2 and 3.2.2 respectively. The ARARs analysis continues for the Offsite OU in this section. Several state and federal regulations were evaluated for the Offsite OU analysis. These include:

- Protection Standards for Uranium and Thorium Mill Tailings (40 CFR Section 192);
- National Ambient Air Quality Standards (NAAQS) and promulgated under the Clean Air Act (CAA);
- State of Idaho Regulations regarding fluoride in forage and Total Suspended Particulates (TSP).

Table 3.3-1 presents the ARARs evaluated for the Offsite OU. The following discussion focuses on those media-based chemical specific ARARs which are pertinent to the development of RAOs.

3.3.2.1 Soils and Solids

The RI and BRA indicate that human health concerns for soils are primarily related to external radiation exposure due to radium-226 and due to background conditions. Although, there are no applicable requirements, Protection Standards for Uranium and Thorium Mill Tailings (40 CFR Section 192) may be relevant. The soil standards state that an average concentration of radium-226 shall not exceed 5 pCi/g in excess of background within the upper 15 cm of soil. These chemical-specific standards were originally promulgated for residual radioactive material at designated uranium and thorium processing or depository sites and to restoration of such sites following use of subsurface materials. Preliminary analyses indicate that these standards may be considered as potentially relevant and appropriate if similar conditions exist. The EPA has released a Review Draft Document for Radiation Site Cleanup Regulations containing specific cleanup levels for soils. Although these standards are not promulgated, the levels may be TBCs. These proposed regulations set standards that place limits on radiation doses received by members of the public to an annual effective dose of 15 mrem/year in excess of natural background radiation levels. These standards apply specifically to federal facilities but may also apply to CERCLA cleanup activities.

In addition, exposure concerns for soil ingestion and consumption of locally grown produce were identified due to arsenic and cadmium respectively. The Preliminary

Remediation Goals developed by EPA Region IX are identified as TBCs for arsenic and cadmium in the Offsite OU soils.

Consumption of beef cattle was identified as a potential future exposure concern due to fluoride. Fluoride on vegetation was also identified in the BRA as a potential marginal ecological concern within the Offsite OU. Although not a CERCLA hazardous substance, the State of Idaho regulations for air emissions contain requirements for fluoride deposition on forage. These regulations were included in the preliminary analysis, as discussed in the air Section 3.3.2.3.

The Idaho regulations of 40 ppm fluoride in forage/feed are consistent with regulations previously promulgated in other states. These regulations address specific agricultural settings. The original basis for such regulation of fluoride concentrations in feed was the potential long term impacts of concentrations over 40 ppm on teeth and bones of dairy cows. The potential for impacts to bone and teeth, if not managed, may result in lower milk production and higher operating costs. There are no active dairy cattle feeding operations in the immediate vicinity of the Simplot and FMC OUs. In addition, RI data indicated that grass concentrations were below 40 ppm fluoride to the north of the facilities where such agricultural activities would be most likely to occur. Given that the current setting in the Offsite OU is not consistent with the areas intended for regulation, the ARAR is not applicable. Future applicable exposure scenarios for this pathway are not likely. However, if land use practices change, the 40 ppm fluoride regulation should be considered on a case by case basis.

Because historical air emissions from the EMF facilities have contributed to the soil and vegetation pathways, specific regulations promulgated though the Clean Air Act were identified as ARARs and are discussed in section 3.3.2.3. Portions of the CAA address ambient concentrations while other portions of both state and Federal air regulations address sources. ARARs pertaining to sources of airborne constituents are discussed in Sections 3.1 and 3.2. Because the Offsite OU is within a non-attainment area National Ambient Air Quality Standards (NAAQS) are applicable, specifically standards for PM_{10}.

3.3.2.3 Air

The BRA indicates that the human health concerns for current residents for the air pathway are primarily related to inhalation of cadmium, chromium (VI) and polonium-210. A similar potential pathway was identified for hypothetical future residents. RI monitoring and modeling results indicate the sources of these constituents include ongoing permitted emissions from both the Simplot Don Plant and the FMC facility.

The Simplot Don Plant and the FMC facility are actively regulated by various state and federal programs, including the Clean Air Act (CAA) and the State and Federal regulations

that stem from it, including air emission permits, state implementation plans (SIP), National Ambient Air Quality Standards (NAAQS), National Emissions Standards for Hazardous Air Pollutants (NESHAPS), and New Source Performance Standards (NSPS). The ARARs for the FMC facility and Simplot Don Plant are discussed in Sections 3.1 and 3.2.

3.3.3 RAOs

Remedial Action Objectives for the various exposure pathways and contaminants of concern associated with current and hypothetical future residential settings within the Offsite OU are provided below. Some of the estimated risks for exposure pathways exceed the upper bound of the 10^{-6} to 10^{-4} cancer risk range. Use of PRGs and RBCs as screening tools for RI data (Section 2.3.1.1) allowed for identification of areas contributing to the estimated risks. These tools will continue to aid in the development and screening of alternatives. RAOs are developed for current and future exposure pathways based on the RI data, the findings of the BRA, and evaluation of ARARs.

Soils and Vegetation within the Offsite OU

The current potential exposure pathways of concern for human health for soils are external radiation, ingestion of soils, and consumption of locally grown produce. Similar potential exposure pathways were identified for hypothetical future residents with the addition of consumption of beef cattle and dairy products. Specific constituents in soils with concentrations greater than the PRGs under a residential setting are arsenic and cadmium. Activities of radionuclides measured above the BRA RBCs included lead-210, uranium-238 and polonium-210. Estimated incremental cancer risk due to external radiation exposure were between 0 to 4.2E-4 based on measured uranium-238 activity and the assumption of secular activity with radium-226 and were largely confined to the areas directly north of the facilities. Therefore, the general RAOs for soils are modified to the following specific RAOs for future residential exposures:

> Prevent external exposure to radium-226 in soils at levels that pose cumulative estimated excess risks above the range of 10^{-6} to 10^{-4}, or site-specific background levels where that is not practicable. Due to the technical uncertainties associated with radionuclide risks, PRGs associated with remediation to ARARs and the upper end (10^{-4}) of the risk range should also be evaluated (for all appropriate scenarios).
>
> Prevent ingestion of soils or consumption of locally grown produce, dairy and meat products containing arsenic or cadmium at levels that pose cumulative estimated risks above 10^{-6} to 10^{-4} or site specific background levels, where that is not practicable.

Fluoride emissions are addressed through the RAOs and ARARs identified for the air pathway for the FMC and Simplot OUs in Sections 3.1.3 and 3.2.3, respectively.

ARARs which should be considered in the development and screening of alternatives for Offsite OU soils are limited. The PRGs developed by Region IX were identified as

relevant to address arsenic and cadmium levels in soils. UMTRA and Radiation Site Cleanup Regulations may also be considered for exposure to external radiation.

The UMTRA standards identified as an ARAR state that an average concentration of radium-226 shall not exceed 5pCi/g in excess of background within the upper 15cm of soil. Background concentrations of radium-226 are 3.88 pCi/g. As shown on Figure 2.3-11, uranium-238 (and therefore radium-226) activity exceeded 5 pCi/g above background in only one of the 67 surface (upper 5 cm) soil samples analyzed in the Offsite OU. This sample was collected adjacent to the northern boundary of the FMC OU, in the Interstate 86 Right-of-Way and immediately south of the area used by the City of Pocatello for the land application of sewage sludge.

Air within the Offsite OU

Risks for both current and future residents in the Offsite OU were estimated in excess of 1.0E-6 for inhalation of airborne contaminants, primarily cadmium, chromium (VI), and polonium-210. The RI monitoring and modeling results indicate the sources of these constituents include the ongoing permitted emissions from both the Simplot Don Plant and the FMC facility. Based on the RI and BRA findings, the following RAO for air within the Offsite OU would apply to both current and future residents.

> Prevent the inhalation of cadmium, hexavalent chromium, and polonium-210 at levels which would result in an ICR in excess of the 10^{-6} to 10^{-4} range.

As noted previously, air emissions from active operations are ultimately controlled by the CAA and specific State requirements.

TABLE 3.3-1

SUMMARY OF POTENTIAL LOCATION-SPECIFIC ARARs FOR OFFSITE OU
(combined State and Federal)

LOCATION	REQUIREMENT	DESCRIPTION	COMMENTS
Floodplain	Executive Order 11988 40 CFR Part 6, App. A	The potential effects of any action taken in a 500-year floodplain must be evaluated to ensure that planning and decisions making reflect consideration of flood hazards and floodplain management.	Portions of the Offsite OU are located within a 500-year or 100-year floodplain. These requirements are applicable to potential actions conducted in floodplain areas.
	RCRA Location Standards 40 CFR §264.18	Hazardous waste units located in 100-year floodplains must be designated, operated, and maintained to prevent washout of hazardous wastes.	
Wetlands	Executive Order 11990, 40 CFR Part 6, App. A	Actions must be managed to avoid adverse effects, minimize harm, and, to the extent practicable, enhance wetlands.	The Offsite OU does not contain any wetland areas which could be effected by actions.
	Clean Water Act 40 CFR §230	Dredging/filling of wetlands are prohibited unless: (1) there is no practical alternative; (2) the discharge of dredged material will not violate state water quality standards, toxic efficient standard, jeopardize endangered/threatened species or cause or contribute to a significant degradation of water quality; and/or (3) adverse effects can be minimized.	

TABLE 3.3-1

SUMMARY OF POTENTIAL LOCATION-SPECIFIC ARARs FOR OFFSITE OU
(combined State and Federal)

LOCATION	REQUIREMENT	DESCRIPTION	COMMENTS
Rivers/Streams	Rivers and Harbors Act	Diversion, channeling or other activities affecting regulated bodies of water may require consultation with Corps of Engineers.	These regulations may be applicable to remedial actions conducted in the vicinity of the Portneuf River in the Offsite OU.
	Fish and Wildlife Coordination Act 40 CFR §6.302	Remedial actions taken in areas that may affect streams and rivers must be undertaken in a manner that protects fish and wildlife.	
	Fish and Wildlife Conservation Act 40 CFR §83	Remedial actions in areas containing fish and wildlife must promote conservation of fish and wildlife.	
Historic Property	National Historic Preservation Act 40 CFR §6.301 (b), 36 CFR §800	Remedial actions within sites listed on the National Registry of Historic Places must minimize adverse effects on the property.	No historic or archaeologically significant areas are identified within the Offsite OU.
	Archeological and Historic Preservation Act 40 CFR §6.301 (c)	Remedial actions within sites containing historical or archaeological data must minimize adverse effects.	
Critical Habitat	Endangered Species Act 50 CFR Parts 17 and 401	Remedial actions in critical habitats must conserve endangered or threatened species and their habitat.	No critical habitat areas are identified within the Offsite OU.

TABLE 3.3-1

SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARs FOR OFFSITE OU
(combined State and Federal)

CONTAMINANT/MEDIA	REQUIREMENT	DESCRIPTION	COMMENTS
Air	Clean Air Act National Ambient Air Quality Standards 40 CFR Part 50	Primary and secondary standards promulgated for six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, sulfur oxides and PM-10. Primary standards are set at levels to protect public health; secondary standards are promulgated to protect public welfare.	Under the CAA, major sources must obtain emission offsets of greater than one-to-one, achieve the lowest achievable emission rate (LAER) and be on schedule for the non-attainment area to come into attainment. These regulations are applicable to major sources (stationary sources emitting more than 100 tons per year of PM10 or other regulated constituent) or to major modifications to existing sources. Emissions from CERCLA activities are unlikely to meet the threshold for "major source," so it is unlikely these requirements will be applicable or relevant and appropriate to the cleanup (EPA, 1989). NAAQS do not apply directly to source-specific emissions limitations; rather they are national limitations on ambient concentrations (EPA, 1989). While not applicable to emissions from cleanup activities, NAAQS may, in some circumstances, be considered relevant and appropriate for CERCLA cleanup activities. In the case of the Offsite OU, which is located in a sparsely populated region of Idaho, the standards might not be appropriate because members of the general public are not regularly exposed to the ambient air conditions from that OU.

TABLE 3.3-1

SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARs FOR OFFSITE OU
(combined State and Federal)

CONTAMINANT/MEDIA	REQUIREMENT	DESCRIPTION	COMMENTS
	IDAPA 16.01.01	Contains standards regulating Total Suspended Particulates (TSP)	These standards would be applicable for remedial actions for residential inhalation pathways. State air quality standards are not applicable to the Facility OUs because they constitute state-wide emission standards rather than emission limits from stationary sources. The standards may be relevant and appropriate depending on site-specific factors.
Groundwater	Safe Drinking Water Act 42 U.S.C. §300 et seq. Pub. L. 93-523	Goal of the Act is to protect human health by protecting the quality of drinking water. The Act authorizes the establishment of drinking water standards.	These regulations are not applicable for the Offsite OU. The RI indicates that groundwater in the Offsite OU currently meets MCLs and MCLGs for all EMF-related constituents of concern.
	40 CFR Part 141	Establishes primary maximum contaminant levels (MCLs) and maximum contaminant goals (MCLGs)that are health based standards for public water systems	

TABLE 3.3-1

SUMMARY OF POTENTIAL CHEMICAL-SPECIFIC ARARs FOR OFFSITE OU
(combined State and Federal)

CONTAMINANT/MEDIA	REQUIREMENT	DESCRIPTION	COMMENTS
Surface Water	Clean Water Act 33 U.S.C. § 1251 - 1376	Provides for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.	These regulations are applicable to any discharge of water from the Facility OUs. The only current discharge to the Portneuf River is non-contact coolinng water from the FMC OU.
	49 CFR Part 131 Quality Criteria for Water	Federal Water Quality Criteria (FWQC) are guidelines from which States determine their water quality standards. Criteria are developed for the protection of human health and aquatic life.	
	40 CFR Part 129	Establishes effluent standards or prohibitions from specific toxic pollutants.	
	40 CFR Part 122, 125	Requires permits for the discharge of pollutants from any point source into waters of the United States. The Act defines a point source as any discernable, confined or discrete conveyance. from which pollutants are or may be discharges. Effluent limitations must protect beneficial uses of water.	

TABLE 3.3-1

SUMMARY OF POTENTIAL ACTION-SPECIFIC ARARS FOR OFFSITE OU
(combined State and Federal)

REMEDIAL ALTERNATIVE	REQUIREMENT	DESCRIPTION	COMMENTS
	Endangered Species Act 16 U.S.C. 1531-1536 50 CFR Part 402	Remedial actions in critical habitats must conserve endangered or threatened species and their habitat.	There are no endangered or threatened or endangered species or critical habitat areas identified within the Offsite OU.
	Rivers and Harbors Act 33 U.S.C § 403	Diversion, channeling or other activities affecting regulated bodies of water may require consultation with Corps of Engineers.	No diversion activities will be required for remedial actions in the Offsite OU.
	Fish and Wildlife Coordination Act 40 CFR § 6.302 Fish and Wildlife Conservation Act 40 CFR §83	Remedial actions taken in areas that may affect streams and rivers must be undertaken in a manner that protects fish and wildlife. Remedial actions in areas containing fish and wildlife must promote conservation of fish and wildlife	No regulated bodies of water will be affected by remedial actions taken at the FMC and Simplot OUs.
	Protection Standards for Uranium and Thorium Mill Tailings 40 CFR 192 Subpart A Subpart B	Standards for the Control of Residual Radioactive Materials from Inactive Uranium Processing Sites Sets concentration limits for residual radioactive materials from inactive uranium processing sites	These standards are developed for closure of inactive facilities but may be considered as relevant and appropriate to the Offsite OU if similar conditions are present.

TABLE 3.3-1

SUMMARY OF POTENTIAL ACTION-SPECIFIC ARARS FOR OFFSITE OU
(combined State and Federal)

REMEDIAL ALTERNATIVE	REQUIREMENT	DESCRIPTION	COMMENTS
	State Requirements IDAPA 16.01.01	Contains primary and secondary air quality standards for fluoride concentrations in ambient air which result in total fluoride content in vegetation used for feed or forage.	State air quality standards are not applicable to the Offsite OU because they constitute state-wide emission standards rather than emission limits for stationary sources. Whether the standards are relevant and appropriate will depend upon site-specific factors. For example, the state fluoride standard is not relevant and appropriate because it is intended to address agricultural feed sources which are not present within the FMC and Simplot OUs. For the same reason, the fluoride standard is not applicable to the Offsite OU.

TABLE 3.3 -1

SUMMARY OF TO BE CONSIDERED MATERIALS FOR OFFSITE OU

ISSUE/AREA	TITLE	DESCRIPTION	COMMENT
Soils	Draft Soil Screening Guidance	Provides methods for establishing screening levels that incorporate site-specific data and assumptions for certain pathways.	To be considered when evaluating ingestion of soil and inhalation of volatile and fugitive dust pathways for the Offsite OU.
	Radiation Site Cleanup Regulations - Preliminary Draft	Non-promulgated standards for radiation site cleanup.	To be considered for radiation cleanup levels.
	EPA Region IX Preliminary Remediation Goals	Provides cleanup levels for various constituents.	To be considered for cleanup levels for arsenic, cadmium and hexavalent chromium.

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3.4 REFERENCES

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